POPULAR AVIATION

The Wartime Diary of Clifford Allsopp
(page 8)

•

LIGHTPLANING IN PAST YEARS

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Bam! You're Now a Caterpillar!
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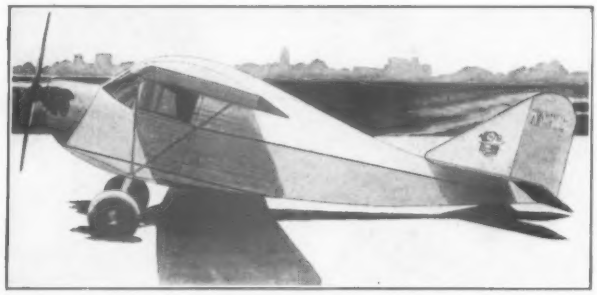

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The downtown headquarters of the club are at 357 North LaSalle Street, where the Air College also is located. Here day and evening classes are held and such subjects taught as ground work for Private, Limited Commercial and Transport licenses. Aircraft Mechanic's courses are also given, as well as special coaching for pilots.

Equipment at the Air College consists of a variety of modern aircraft engines, workshops, wind tunnel, etc. All classroom and practical work is under the supervision of a Chief Instructor, a man of rare ability and prominent in the aviation field. Airplane construction, repairing, assembling, engine overhaul, wing repairing, covering, doping, rigging, wire splicing, welding, care of parachutes, are a few of the aeronautical subjects taught.

Field Headquarters of the Edgewater Flying Club are at the Chicago Municipal Airport, 5250 West 63rd Street. This is one of the most important flying centers in the entire country. Members of the Club are able to observe and study the operations of the aeronautics Branch of the Department of Commerce, and Aero Division of the Illinois National Guard, the many supply and service companies, air mail companies and air lines.

In addition to the Chicago Municipal Airport, the Club uses the Harlem Airport, only three minutes by air from the Municipal field, for training. This is done in order that beginning flyers will not be interrupted or endangered by other planes.

Licensed Transport Pilots and licensed aircraft only are used for student instruction. Also, approved type parachutes are provided. All planes are offered to members at cost. Flight instructors, likewise, are offered at cost and are available at all times. One of the new NB Trainers equipped with an 80 h.p. engine has been purchased by the Club. The new NB Trainer, incidentally, is known as one of the safest and easiest-to-fly planes on the market. It compares very favorably in performance with the Autogiro. Not only is it safer than most planes, but it is cheaper to operate. The saving in cost is passed along to the club members.

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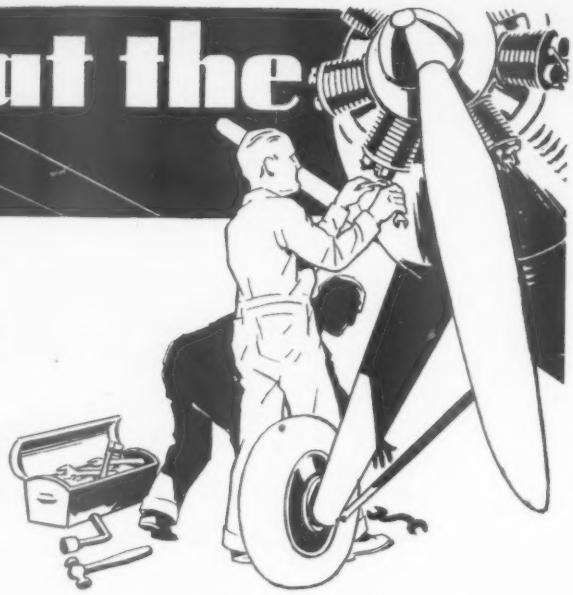

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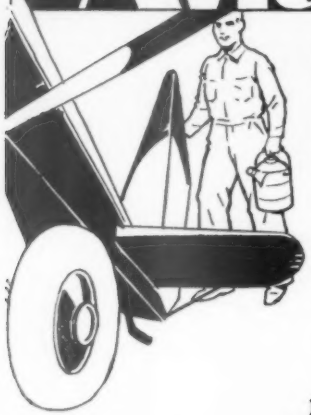

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LINDBERGH LEARNED

An Airy Chat With the Editor

AT least forty-eleven readers have bawled us out this month for stopping each issue of POPULAR AVIATION on page 66 instead of tacking on a couple of hundred more pages each issue.

This month we almost wish we had 266 pages to fill, because in that case we might have been able to prevail on Lieutenant Richardson to let us see more of the War-time diary of Lieutenant Clifford W. Allsopp. If all of Lieutenant Allsopp's diary is as interesting as these excerpts that Lieutenant Richardson uses in his War story this month, it would certainly make interesting reading. However, we think that Lieutenant Richardson has used fine discrimination in picking out several of the most exciting episodes of Lieutenant Allsopp's War career for your entertainment.

The photographs which accompany the story are especially interesting and valuable. They were loaned by Lieutenant Allsopp and form a part of his album of War photographs, which is one of the finest we have yet seen.

* * *

THE newspapers and newsreels have undoubtedly informed you that the U. S. S. Akron was recently christened with appropriate ceremony. To those who have closely followed the construction of the Akron, this ceremony marked an important step forward in America's conquest of the air.

Walter E. Burton, who is intimate with both the U. S. Navy and Goodyear officials, looks into the future and visualizes the Akron in War-time—a veritable Queen of the Air.

On the other hand, Bogart Rogers scans past dirigible history, and in the light of many lighter-than-air disasters he faces the future with frank skepticism.

Who is right? Read these two articles for yourself and see if you can decide.

* * *

NONE of you need introductions to Tony Fokker or Dick Byrd. Both of these men of action have performed deeds that have made their names world famous. When such men disagree you can be sure that the argument will be worth watching.

We are fortunate this month in being able to present the real inside story of this famous "battle of the giants" written by the former private secretary of Mr. Fokker.

* * *

MAJOR FALK HARMEL is one of our old-time contributors. This month he draws on his experience as official custodian of the records of the Caterpillar Club to tell us the story of what these caterpillars think of when they are suddenly faced with the necessity of trusting their life to a mere bit of silk. It's a fast moving yarn and packs more thrills than a dime novel.

* * *

THE interest in planes of former years continues to grow, and we receive letters almost daily from enthusiastic readers who express great interest and surprise at some of the ingenious designs now long forgotten.

This month, Manley Mills gives us a brief glimpse into the history of some early planes that were forerunners of the present day lightplane. There is a treat in store for you in this article.

* * *

IN response to many requests, we are glad this month to be able to present an authoritative article on glider training. The authors, Martin Schempp and Jack Herrick, are both experienced glider pilots. Mr. Schempp has recently added new laurels to his crown by his notable performances at the recent Elmira glider meet.

We believe that this article should be of distinct value to many present glider pilots as well as to all those who are still looking forward to their first flight.

* * *

WE have lost track of the number of people who have asked us to tell Albert McGrigor to go jump in the lake because of the way in which he spoke of Col. Rickenbacker in the August Airy Chat. We believe that we could not do better than to let you read this letter from Allister Macdonald of New Glasgow, Nova Scotia.

In regard to Albert McGrigor's attack on Eddie Rickenbacker, I, as another fellow of Scottish extraction not living in the U. S. A., would like to point out that it is more reasonable to suppose that America's attitude towards the Capt.—or is it Col.—is purely that which a country takes towards its greatest ace. So far as I have seen, no one tries to represent Rickenbacker as the greatest war ace, but merely as the ace of the Americans.

Also, I would hasten to remark that Bishop was not "England's greatest ace," but a Canadian; however, Mr. McGrigor doubtless meant "Britain's greatest ace." As I have a hunch that our friend Albert will come in for a lot of criticism from your readers, I will let him alone at that. I guess he just didn't take everything into consideration.

That just about expresses our sentiments and we hope that this will fix things up with both Albert and the Colonel.

* * *

IT seems that our Airy Chat is read pretty well all over the world. Here's a letter from Mr. H. Camm, editor of Hobbies Magazines, published in London, England:

My attention has been drawn to a letter published in your July Airy Chat, in which Mr. Burchell makes some totally erroneous statements regarding Model Aeronautics in England.

In the first place, Mr. Burchell has no claim whatever to the title, "Father of Model Aeronautics." There are many others who can claim this somewhat doubtful honor, notably V. E. Johnson, E. W. Twining, A. E. Jones and myself.

Mr. Burchell has been a member of one of the London Clubs for a few years and done a fair amount of model flying, but has done no experimental work that has ever been published. His statement that no English paper regularly deals with Model Aeronautics is quite wrong. For the past 15 years I have conducted regular articles on this subject, accompanied by drawings and photographs in quite a number of weekly and monthly publications, and have also published three books on this particular subject. Mr. Burchell, therefore, cannot be very well read.

May I suggest that in future before you give credence to these ill-informed letters from nonentities you should take the trouble to verify the facts before passing on to American readers wrong information.

Thanks for calling this to our attention, Mr. Camm. We would be glad to hear more of your model activities and would be glad to have your comments on our own Model Department.

(*Continued on page* 62)

XUM

POPULAR AVIATION

A Magazine for Everyone Interested in GLIDERS LIGHTPLANES MODELS

Volume IX OCTOBER, 1931 Number 4

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The WARTIME DIARY *of* CLIFFORD ALLSOPP—BOMBER PILOT

A gripping account of the exciting experiences of an American pilot as revealed in his personal diary.

by LIEUT. JAMES M. RICHARDSON, D. S. C.

IT WAS a far cry from the Mexican border warfare of 1916 to the bloody battles of the Great World War.

Very few of the men who toiled across the burning sands at our southern boundary dreamed that they would soon be killing German soldiers in France instead of chasing Villa bandits.

Clifford W. Allsopp of Newark, New Jersey, and Charles G. Slauson of New York City, buck privates in the renowned Essex Troop, never realized that their Mexican border venture was the first link in an unusual chain of coincidence that would throw them together here and beyond the seas.

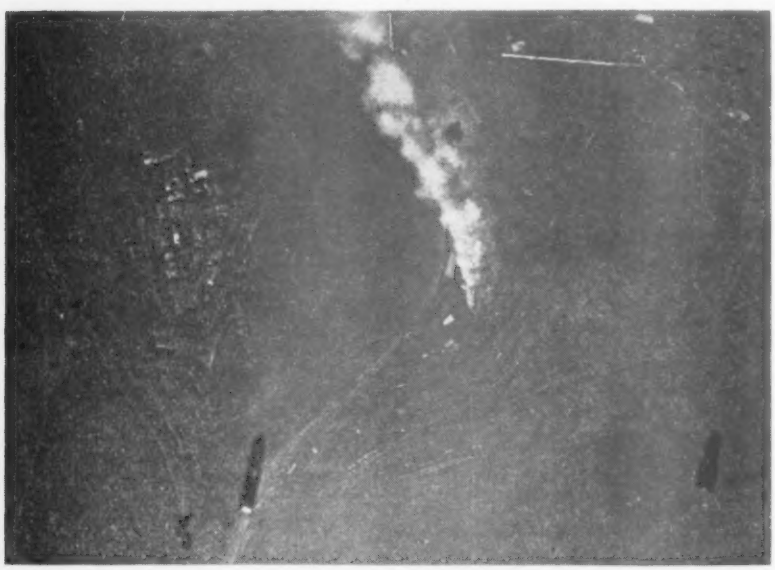
When the U. S. declared war, each without knowledge of the other, applied at the Reserve Officers' Training Camp and received orders to go to the same post for instruction. Then both applied independently for aviation.

A short time later they were surprised to find themselves members of the same ground school class at Princeton. They sailed for France together, and the first break in the chain came there——Allsopp was sent to Foggia, Italy, for preliminary training; Slauson was kept in France.

In following the experiences of these two airmen I consider it a great privilege to use excerpts from the diary of Lieutenant Allsopp. They are extremely illuminating and will reveal how strangely interwrought in war's most dangerous and exciting pastime were tragedy, merriment and displays of skill.

Allsopp reached the flying school at Foggia, Italy, the latter part of October. The school had been constructed by the Italians expressly for the Americans and was equipped with the old Scissor-control Farman, the only type of plane available.

On February 23 Allsopp was ordered from Foggia to the great flying field at Issoudun, France, where he was thrown with Slauson again. At Issoudun he found that the preliminary training he had had on the Farman was of little value to him in conquering the capricious Nieuport.



A remarkable view of Montmedy, Imperial German Headquarters. Note the two bombs descending, and also the warehouse fired by one of the first bombs dropped.—(Photo, courtesy of Lieut. Allsopp).

Within ten days after his arrival at Issoudun Allsopp was back on flying duty again and made the following entry in his diary on March 9th:

"Went to Number 1 Field—"Grasshoppers." [Note: These were the short-winged planes or rouleurs that would not leave the ground] and "more fun."

Wednesday, March 13.

"Up at 6 A. M. Had classes in machine gun, motors and trap-shooting during the morning. Had my first ride in a Nieuport after lunch and find them very different from the Farmans. They are much faster, trickier and harder to control.

April 2.

"Reported to 18 meters [Note: a smaller and faster type machine—the next step after the 23 meter plane] at 1:30 and put name on list along with Red Graham. Started to rain and Mac turned over just as we were leaving. Terrible smash, but he's O. K."

April 10.

"I flew from 4 to 6:30 this afternoon. On one flight my tachometer broke and the gas tank cap came off in the air. Used three machines and had fourteen hops. The 18 meter plane is faster and smaller than the 23.

April 12.

"Took first right hand spirals and had to do them over again at 1200 meters. Took two more trips and did left spirals O. K. but started to side slip.

April 18.

"Had ten more hops in afternoon. These 15 meter ships are certainly quick on the trigger and hard to handle. Two more fellows smashed up in afternoon but neither hurt.

April 22.

"Several close shaves on account of wind. Made first spiral from 1,000 meters O. K. and hit landing circle. Was told to make next tighter and did but was nosing down like hell. Finally pulled her out and turned with wind. Had cut off small gasoline jet and also switch and started a left turn to head into wind for landing, but saw I was unable to get around with the altitude I had and the strong wind.

"Tried to give her the gun but forgot switch, and by this time I could not turn with the wind partially behind me as controls became useless and I was obliged to nose over into mean cross wind, and hoped to escape trees some thirty feet apart in the orchard.

"While still some feet up and going at a terrific speed I hit but managed to guide the plane between two trees and SOME SMASH! Wings were left in the trees, and the wires had cut about four inches into the trees. The fuselage—with me in it—continued some fifty feet ahead and landed on one side.

"And the worst luck: I was suspended from flying for a week, whereas the English and French policy is to send you up immediately.

XUM

May 15.

"Flew ship to acrobatic field and worked on the dummy to get idea of the way controls should be placed to do stunts. Up to do vrilles (tail spins) at 10 A. M. and made two O. K. Dropped 200 meters in one, 250 meters in the other. Up at 2 P. M. and made eight renversements at 1,000 meters. Several O. K. and others poor. Next came the side-slips and both were pretty poor, and I left on the blink."

May 21.

"Returned from town in Blair's car. Buck Wiss has received his punishment by being made instructor on these damned 23's."

IT WAS definitely determined at this time that Allsopp and Slauson would be sent to the school for day bombers at Clermont-Ferrand.

After spending a number of hours in formation flying at Field 7, Issoudun, they went to Clermont at the end of June. Here they took the regular course for day bombardment pilots and finally reached the front on September 9, becoming members of the 11th Aero Squadron.

On September 9, 1918, enough new pilots and observers joined the squadron to bring it up to full strength, and they actually began work over the front three days later without having a chance to make a single test flight or to fly a practice formation.

Harried by an incompetent group commander, they were driven into action under conditions that either the French or English would have considered suicidal. Think of flying a plane into action that one knew nothing about—most of these pilots had never flown a De Haviland; for they had trained on Breguets.

On September 14, seven machines of the Squadron set out to make their first bombing raid, the railway yards at Conflans being the objective.

Chapin, pilot, and Laird, observer, led the flight. Leaving the field at Amanty, they climbed away northwest toward Verdun, circled the city and turned east across the lines to their objective just after they passed the northern rim of the historic Verdun battlefield.

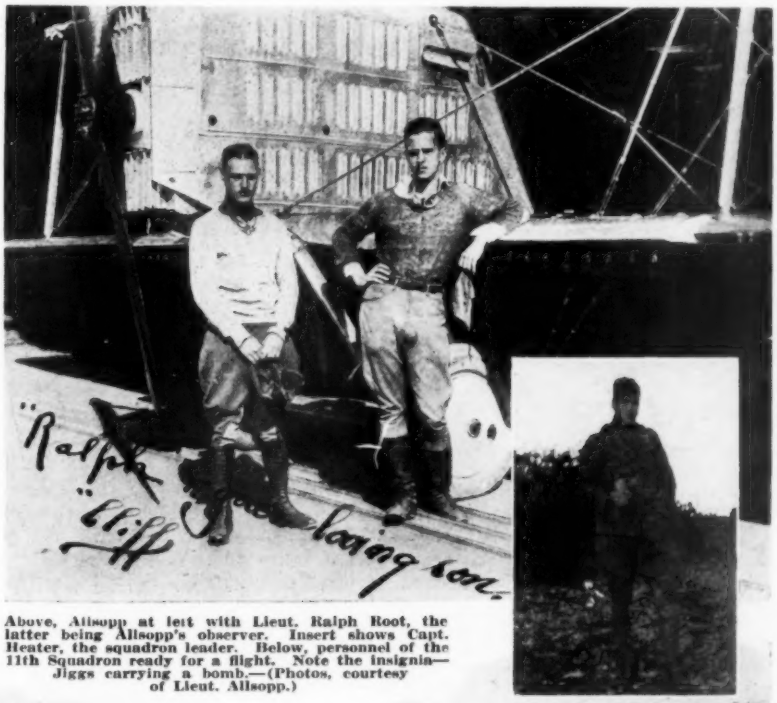
During their twenty-mile flight to the objective they flew through a terrific barrage of bursting shells that might easily have discouraged more experienced airmen; yet never once did they break formation or show signs of the nervousness they felt.

Near the target the "get-ready" signal was fired by Laird. As the bombers plowed toward the town, the railway yard loomed up in their sights for a moment, the bombs were hastily released and Chapin led his followers in the direction of home and safety.

When they were just over the edge of Conflans the anti-aircraft barrage stopped as suddenly as it had begun. This was a great relief to the new men, but the airmen who had been with the French realized it meant trouble.

And in a couple of winks Laird, looking anxiously over the side, saw *fifteen Fokkers climbing swiftly to their level.*

There was little preliminary maneu-



Above, Allsopp at left with Lieut. Ralph Root, the latter being Allsopp's observer. Insert shows Capt. Heater, the squadron leader. Below, personnel of the 11th Squadron ready for a flight. Note the insignia—Jiggs carrying a bomb.—(Photos, courtesy of Lieut. Allsopp.)

vering on the part of those red-nosed Fokkers; they so outnumbered the Americans that they considered a furious, slashing attack the best tactics.

And they were right, seven clumsy De Havilands making at best ninety miles an hour were easy prey to fifteen shifty Fokkers capable of doing a hundred and twenty miles an hour. Fourteen American pilots and observers most of whom had never seen a German plane before seemed like "cold meat" to fifteen German pilots from one of the oldest enemy fighting units.

Instead of trying to avoid our observer's fire by keeping under the tail surfaces of the American machines, the German flyers flew boldly in. One wave of them coming from behind attacked the highest machines in our V formation by executing fast climbing turns at the end of which they fired a short, sharp burst, immediately doing stalling turns and side-slips toward the other arm of the formation, where the stunt was repeated. These clever maneuvers left them exposed but an instant to our fire.

Soon the entire fifteen Fokkers had closed in and were attacking from every quarter except that in front. Each American plane had at least one adversary, some of them had three. It was a terrific battle.

Bullets were whining and dancing dizzily about. They sank with a thud in the solid portions of the De Havilands. They ripped through the fabric of wings and tail planes, they splintered struts and perforated the cockpits about observers and pilots.

Yet the first machine to go down was German. One of the Fokkers hung an instant too long in making a stalling turn and Hal Greer, of Laredo, Texas, put a bullet through the gasoline tank and set the machine on fire.

The rest of the battle was a series of agonizing moments for the Americans. The Fokker pilots drove Horace Shidler of Hollywood, Calif., out of the formation, put an explosive bullet through his leg, riddled his machine and killed Harold Sayre, his observer, also of Hollywood, before they could reach the ground. Despite his wound Shidler succeeded in landing his machine; shortly after he was taken prisoner.

Fred Shoemaker of Mt. Clemens, Michigan, and Robert Groner of Richmond, Virginia, his observer, had to withstand the combined assaults of four Germans, who forced them to land in German territory.

The timely arrival of a flight of American Spads probably prevented further losses. The Spads engaged the patrol of Fokkers in a warm battle and drove them off.

Five of the American planes reached the home airdrome, and the occupants were amazed at the condition of them. Nearly every one had been riddled by enemy bullets that, in some instances, just barely missed vital parts of the planes or the occupants themselves. The flight had been a bitter baptism of fire and distressed everybody because of the uncertainty attending the loss of four comrades.

EVERY member of the American army in France will remember the unsettled weather that prevailed during the St. Mihiel drive and the week that followed.

When the men of the 11th Squadron came out of the barracks before dawn on the morning of September 18th, they felt a cold drizzle hit them in the face, and at once they concluded that the weather would be unfit for flying just as it had been on the day before.

And in reality conditions were not suitable for a bombing raid at any time during the day; yet one was made, a raid that competent observers classified as "murder" before the patrol left the field and that, in truth. It proved to be as futile, costly and tragic as any the American Day Bombardment forces ever carried out.

Lieut. Allsopp standing beside the remains of his ship, which was wrecked by another pilot in a collision while in the air.

About two in the afternoon Hooper, the commanding officer, hurried out of his quarters and said: "We've got to go. We are ordered to bomb La Chaussee. I know this is murder, but the swivel chair commanders don't know it, and all we can do is to go and trust to luck."

Hooper was reminded by other members of the Squadron that, being the Squadron commander, he was not required to go.

He replied, "I can't send you fellows over unless I go myself." And that laconic statement explains why Hooper was an ideal Squadron commander, why men would have waded through fire for him. He was not the braggadocio type of officer who thought that his experiences in the regular army entitled him to transfer to the Air Service and then sit back in the rear, ignorantly driving willing airmen to fly against the enemy he had never engaged, had never seen and would not dare fight. No, Hooper was not that type; he was a Reserve Officer, a born leader and he did not ask his men to do things he would not do himself.

And all the pilots and observers who crawled into their bombing planes that day knew that it was a species of insanity to order men to fly De Havilands to La Chaussee in the prevailing weather.

Ten planes floundered from the muddy field and climbed into the low-hanging clouds. A few minutes later two of the planes developed motor trouble and returned to the field. A short while later another machine that could not keep up with the formation turned back. Seven machines crossed the lines, Chapin and Laird leading the formation.

In the first big cloud bank they plowed through after crossing the lines one pilot lost control of his plane, went into a tail spin, pulled out far below the clouds and turned for home, realizing that he could never catch the formation again.

The other six planes emerged from the cloud and formed in a V-shaped flight as quickly as possible, the pilots continuing to climb the heavily loaded machines in the vain hope of getting above the summit of the clouds that seemed to roll higher and higher. And every time they tore through a dense cloud mass, they came out separated and then maneuvered into a tight formation with all possible speed.

Every condition was perfect for the enemy, should there be any lying in wait in the clouds. Flying the speedy, powerful Fokker, the towering cloud banks meant nothing to the German pilots; they could climb above them at will, hide behind them as long as need be, plunge from their shadows in sudden deadly attacks.

And, indeed, an alert patrol of the Fokkers *did* attack the luckless American bombers just after they dropped their bombs on the secondary objective near Conflans.

The Fokkers, in overwhelming numbers, attacked the Americans from the cover of a cloud, and they caught the bombers at a moment when they were spread out and had but the semblance of a defensive formation. Before the battle was thirty seconds old, the Germans broke the American formation completely and proceeded to surround the individual De Havilands that floundered all over the sky. And these crack German flyers understood their enormous superiority perfectly and risked everything to exterminate the separated bombers who fought valiantly.

Hooper with Ralph Root for his observer was shot down during the intense battle. Hooper was hit in the foot by an explosive bullet, and Root was wounded in four places. They were made prisoners.

Edward Comegys of Washington, D. C. and Arthur Carter of Carbondale, Illinois, his observer, went down in flames after making desperate resistance.

Harry Strauch and John Tyler were the occupants of another plane that fell in flames. Both had volunteered for the raid in spite of its dangerous character.

Lester Harter and McCray Stephenson were in the third machine that the Germans shot down in flames. Though they finally succumbed, their resistance was brilliant.

(Continued on page 58)

XUM

German Gliding School Trains Many Students

THE training school at Rossitten, Germany, for motorless airplane pilots has tamed a number of falcons so that their flight can be controlled and kept within range of a film camera. Experiments also will be made with an eagle. Every phase of the flight is shown in slow-motion pictures, which are studied carefully by the would-be aviators.

Among the 261 pupils trained at this station in 1930 were representatives of eight foreign countries, chiefly Americans and Englishmen. There also were twelve women pilots, from sixteen to thirty-two years old.

Among the new motorless glider types now being used are a tailless machine which will be piloted by Lieutenant Dinort, present world's record holder, and a glider with unprecedentedly small span.

Breaks Glider Record

HERR GROENHOFF, famous Glider pilot, is shown gliding over the Munich Airport at the beginning of his record breaking glider flight. This flight extended from Munich to Kaden, during which time the glider passed over the Czecho-Slovakian frontier.

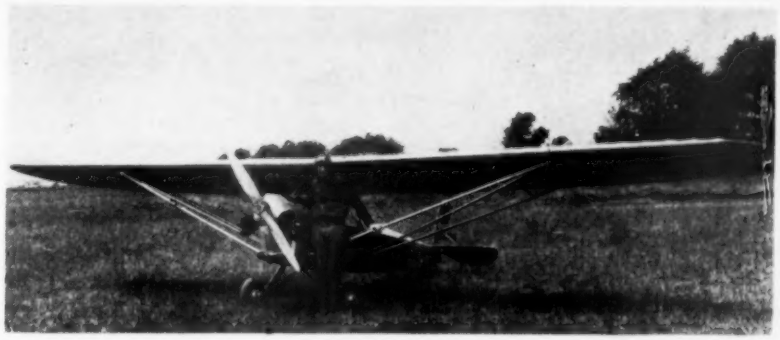
Details of this flight are not known at the present time, so that we cannot give the total distance in miles nor the duration in hours. The wing structure is quite interesting and is clearly shown through the transparent cellophane wing covering, or the German equivalent for cellophane.

Autogiro Races 'Chute

ONE of the most unusual autogiro demonstrations put on was a "slow" race between a 'giro and a parachute, at the Los Angeles Municipal Airport.

Ascending to about 2,000 feet, the pilot let the plane carrying the 'chute jumper rise some 200 feet higher. The 'chute opened approximately at the pilot's level as he put his machine into position for vertical descent. But the parachute was dropping considerably faster than the 'giro and it was necessary to go into a tight spiral dive to again level off even with the 'chute. The two drifted earthward but when the jumper had landed the autogiro was still well over 125 feet in the air. The test was performed twice for the benefit of newsreel photographers.

Heath Parasol Sets New Altitude Record



Heath Parasol Monoplane on which Merrill Lambert, shown here, set new lightplane altitude of 17,907 feet.

A NEW world's altitude record for planes weighing less than 440 lbs. was set July 18, by Merrill Lambert, in a Heath parasol, powered with a Poyer engine.

Lambert was up about three hours and, according to Heath officials, reached an altitude of over 19,000 feet. The former record of 17,037 feet was held by a French army officer. At the maximum altitude, the temperature was only 27 deg. F., but the Poyer motor worked perfectly. The flight was made without the aid of oxygen flasks.

A standard Heath, powered with a Heath B-4 motor, reached between 12,000 and 16,000 feet, where the altimeter failed. The third Heath, powered with a Continental A-40 motor, ran short of gasoline at 12,500 feet.

Flyer Has Varied Career

RUSSELL BOARDMAN, the Boston aviator who made the non-stop flight from New York to Istanbul, Turkey, with John Polando recently, has so many other thousands of miles of flying to his credit that he has lost track of his mileage.

Boardman earned, when in his "teens," the nickname of "Daredevil" Boardman, because of his hair-raising motorcycle racing and stunts, and later his wing-walking on the planes of other aviators at country fairs. He has been flying for nearly ten years.

Boardman is known as a "fog-eater," and probably has done more night flying and flying in the fog than any other aviator in the country. As a flyer he is noted for never having been late for a scheduled landing yet. He has stunted for the movies in California, and last year made a two months' tour of the country in the interests of the American Legion's national convention, held in Boston last October.

Once he tried his hand at dude ranching in Arizona, but sold the ranch to try his hand at silver mining in Nevada. His old love of flying claimed him again, however, and he returned to Boston and in 1929 began his preparations for an attempt at the non-stop long distance flying record.

English Low Wing Monoplane

A RATHER novel bi-motored English monoplane has recently undergone successful tests in England. As will be seen, the two engines are well streamlined and the housings blend into the contour of the wings with the least possible interference with the wind stream passing over the wings. The wings are unusual in the fact that they are of the monospar type with only one spar, a type that has often been proposed but which has been adopted in only a few cases.

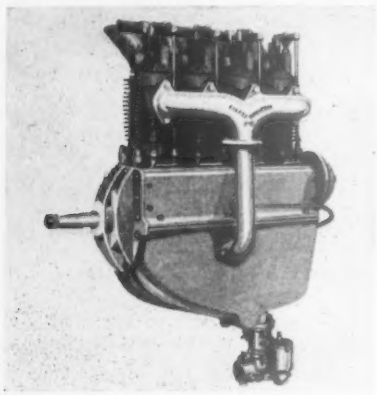
Locating the engines and propellers in this position has a decided advantage where slow landing speeds and lift effectiveness are particularly desirable. Since the slip-stream from the propellers covers a very considerable percentage of the wing span, it is obvious that the lift of the wings is increased at low ground speeds. Again, the higher air-stream velocity over the wings leads to smaller wing areas and lighter wing structures than would be possible under ordinary conditions.

The two-motored English cabin plane in flight.

So far as passenger visibility is concerned, this machine is very well laid out. Perfect vision is had from almost every angle, which is seldom the case with a low-wing cabin plane. The accompanying illustration was photographed during the test flights.

Church Announces New Lightplane Engine

BUILDERS of the Church Mid-wing monoplane announce the delivery of the Church Marathon Engine, Type J-3, which promises to be a popular power plant for light-plane owners and builders. The new product bristles with novel improvements that are of great interest to the lightplane world.



The new Church four cylinder lightplane engine. Note carburetor location.

It is an air cooled four cylinder engine, cylinder bore 3⅛ inches and with a total displacement of 108 cubic inches. The cylinder design is novel in the fact that an overhead exhaust valve is used in combination with a pocketed intake valve. The valves are of Sylichrome, which together with the new arrangement is said to give trouble-free valves. The engine actually develops 41 horsepower, which is ample for almost any type of lightplane.

Another feature of the Church Marathon engine is the carburetion system, carburetion taking place through the crankcase. As the exhaust comes out at the exact opposite end of the carbureter, the fire hazard is reduced.

The highest grade materials are employed, chrome nickel propeller shaft, chrome nickel steel cylinders and pistons of manganese aluminum bronze. The smaller parts of the valve system are of forged nickel steel. Complete, the engine weighs but 107 pounds, or 2.46 pounds per horsepower. It is designed for light two-place ships, and gives single seaters pursuit ship performance.

"Jim" Church shows his new engine installed in a lightplane built by an amateur home builder

New Auxiliary Field Marker

A STANDARD marker for auxiliary landing fields has been adopted by the Department of Commerce.

Auxiliary landing fields do not provide facilities for shelter, supply, and repair of aircraft, and are not used regularly for receiving or discharging passengers or cargo by air. However, they have been designated by the owner as being available for landing and taking off of aircraft without charge, entirely at the risk of the owners and operators of such aircraft. The Aeronautics Branch has a record of 199 such fields, located throughout the United States, in addition to 60 in Alaska.

The standard marker consists of a white or chrome-yellow cross made up of two straight strokes four feet wide by fifty feet long, intersecting at right angles at their mid-points. The Aeronautics Branch recommends that the marker be placed near the center of the landing area and that it be constructed of crushed stone, gravel, or other wear-resisting material, used in conjunction with a suitable binder to prevent displacement. The marker should finish flush with the surrounding surface and, unless constructed of a bright white material, should be kept whitewashed or painted chrome yellow.

The Falcon Cabin Mono

ONE of the season's offerings in the way of a lightplane is the two-seater "Falcon" monoplane about to be put into production at the low price of $995.00, or $1,145.00 including a steel hangar. A cabin plane at this price is unusual and the combination of a hangar with the ship is most interesting.

Falcon Specifications

Wing span	36 ft.
Length	20 ft. 6 in.
Top speed	85 mph.
Low speed	28 mph.
With special speed wing	98 mph.
Engine	42 h. p.
Gas consumption	3 gals. per hr.

A special feature that makes storage a simple matter with the Falcon is a demountable wing that requires only five minutes to unlock and swing back. When the wing is swung back on its universal fitting, it can be housed in a 10 by 24 foot space.

A special motor made by this company is standard equipment, although other engines can be supplied at additional cost. This is a two-cylinder air-cooled engine with a double throw crankshaft that develops 42 horsepower.

Junior Flyer Solos in 45 Minutes

CHARLES DARNES is a seventeen-year-old boy, graduate of the Miami High School, and a licensed pilot. Like countless other boys Charles was greatly interested in aviation and everything pertaining to flying. But he had this quality which many other boys do not cultivate—he was thorough in his understanding of the principles of aviation. After school and every spare hour was spent at the Wentworth Field of the All American Airways, Miami. Here he studied each plane on the field or in the hangar.

He would sit for an hour in the cockpit and concentrate on the mechanism in front of him. When students were receiving instruction he would hang around and absorb everything he could. When they were criticized by their instructor, Charles was listening in and learned why the landing or takeoff had been faulty or why this or that had not been done correctly.

Charles wanted to take the regular instruction, but could not afford it. He was given a job at the airport and worked for six months in the hangar. His salary was allowed to accumulate until he had sufficient for about seven hours' instruction to his credit. It took him some three months to arrive at this point.

Of course Charles had been in the air many times before he started on his own course. He never let an opportunity slip by to go up if he could be given a trip. On the day when his formal instruction began, he went up with his instructor Les Lewis, and for fifteen minutes they worked together. Then, because he was thoroughly familiar with the controls, Les allowed him to handle the ship alone. This lasted for thirty minutes, then Charles brought the ship down to the ground, unaided, and made an almost perfect landing. The instructor got out and Charles took to the air again, soloing forty-five minutes after he took his first real lesson.

Charles Darnes about to wind-up the prop on the trainer. He is believed to hold the world's record for quick solo.

XUM

The Fokker-Byrd Controversy

The inside story of the beginnings of a famous dispute written by Mr. Fokker's former private secretary.

by HELEN K. SCHUNCK

ANY controversy between celebrities is always a matter of public interest; and when one or the other of the participants happens to be a "grand stand player," the result often turns from drama into comedy or vice versa.

Note the recent public meeting between two of America's most brilliant novelists. That, however, was a give and take proposition, settled on the spot, in which the aggressor was repaid not only to the satisfaction of the defender, but to the decided amusement of the public as well. The more recent attack of another celebrity against an American idol has not been settled to the satisfaction of the interested public. Dreiser slapped Sinclair Lewis. Commander Byrd seems to have turned the other cheek to Fokker.

Rear Admiral Richard E. Byrd, at left, in conversation with Anthony H. G. Fokker before the controversy started.

It has been my pleasure to have been intimately associated with Anthony H. G. Fokker. I was his private secretary at the time of the transatlantic flight of Commander Byrd in the Fokker airplane "America." Accordingly, I have first hand knowledge of a number of interesting phases of this argument.

It so happens that I joined the staff of Mr. Fokker's American manufacturing company, then the Atlantic Aircraft Corporation, the very day the Fokker airplane in which Commander Byrd made his North Pole flight left the United States by boat. Mr. Fokker was in Europe at that time, and could not join in the festivities here, much as he would have enjoyed being a party to them.

This particular airplane was the very first "Trimotor" designed and built by him, and was his pride and joy. He had personally flown it and in it practically all over the United States, had submitted it to the United States Army Air Service (now the Air Corps) for extensive tests, and could justly glory in its accomplishments.

Certainly it was a matter of pride to him that Commander Richard Byrd had selected it for his North Pole expedition. Fokker ships had successfully performed other magnificent feats; their maker had no doubt that this particular ship would live up to his expectations. And history proves that it did.

I remember most distinctly the elation of the entire Fokker organization when news reached us that Commander Byrd and his beloved companion, the late Floyd Bennett, had negotiated their successful flight from Spitzbergen to the North Pole and back. I remember most distinctly the comradery that prevailed when they returned to the United States; that prevailed, that is, until the evening Commander Byrd made his first public appearance in the States to tell about his flight.

The address was given at Carnegie Hall, New York City. Mr. Fokker made up a large party of friends to attend, and in his usual genial and democratic manner included among his guests two of the girls of his office staff, Miss Helen McCabe and myself, the "two keeds" (kids) as he always called us. It was a gala occasion for all of us—but it turned out to be a boomerang.

Mr. Fokker has the happy faculty of being not only an airplane design genius, but also of being the best press agent for himself anyone could hire. The North Pole expedition, planned and executed by Commander Byrd, financed by Edsel Ford, turned out to be a *Fokker* triumph, merely because a Fokker airplane was used, and because Fokker in his own fashion had been able to keep the searchlight of the press turned on "Fokker" rather than on Byrd during the entire life of the expedition.

Byrd's lecture was profusely illustrated with slides, and the most noticeable feature of practically every slide was the word "Fokker." It appeared on the top of the wing; on the bottom of the wing; on the nose of the ship; on the tail of the ship. The only thing not present in the lecture was the utterance of the word "Fokker" by the man who was telling about the flight.

And that's how the fight began.

BY THE time Commander Byrd's plans for a transatlantic flight had matured to the point where he was interested in securing equipment for it, he had learned several important lessons: first, that Fokker airplanes could be depended upon to accomplish the work for which they were intended; and, secondly, that if they were used, some way would have to be devised to turn the resulting publicity into the desired channels.

Accordingly, after he was assured of the financial support of Rodman Wanamaker for this new and even greater venture, a contract was entered into with Mr. Fokker's company for another trimotor airplane, especially built to fulfill his requirements. This contract contained a provision that absolutely no publicity was to emanate from the manufacturers about this airplane; in fact, the contract contained teeth in the form of a penalty clause to positively insure the connection of the word "Byrd" with this endeavor.

The Atlantic Aircraft Corporation was very careful to advise those few employes who had any knowledge of the transaction of the necessity for absolute secrecy; in fact, even the files were marked with the legend "Spitzbergen flight" and on the floor of the factory the airplane being built was always referred to as the "Spitzbergen" airplane.

All went well until shortly before the airplane was ready for its first flight tests. Mr. Fokker had planned to be in Washington on a certain day, leaving New York at midnight the previous day. At the last moment he changed his plans, and I, being his secretary, was the only person aware of it.

Imagine the consternation of the office the following morning to see in the

papers a story, emanating from Washington, giving details of the proposed flight, linking the release with a request having been filed with the Navy Department for Floyd Bennett to accompany Commander Byrd on a transatlantic flight.

Fokker was of course blamed for the story. I know that he was innocent.

Fokker, at left, with Bernt Balchen, the pilot to whom Fokker gives the credit for Byrd's flights.

He would not have been human had he not delighted in the scoop, but the story not only was not published of his volition, but was also without his knowledge and consent.

Matters from then on between the Commander and Fokker were to say the least considerably strained. But even though the story had become public property, we in the Fokker organization were cautioned to refrain from confirming the fact that another Fokker airplane had been selected as the Commander's vehicle.

Difficulties did, of course, crop up in the course of the construction, differences of opinion, mostly. And on one of these numerous occasions Mr. Fokker instructed me to sit in on a conference between himself, Commander Byrd, Floyd Bennett, and another official of our company—not only to sit in but to surreptitiously report the conference verbatim. I knew that couldn't be done, and told him so, but orders were orders.

I hadn't been there long until Commander Byrd discovered the reason for my being present. There were fireworks. We stopped the conference and went to work. At noon I was sent to invite the Commander for luncheon. Can you imagine my surprise when, instead of berating me—as I certainly felt he had a legitimate right to do—he apologized for having lost his temper.

And then, just when things looked most rosy, when the difficulties had been more or less forgotten in the rush of work finishing the ship, the catastrophe happened. Mr. Fokker took the ship off for its first flight test; it performed splendidly; but in making the first landing—it crashed. Can you picture that wreckage, not only of a mere airplane, but of hopes as well? Floyd Bennett was seriously injured; and the nose of the "America" had to be rebuilt.

This was another dreadful setback to Commander Byrd's plans. It meant not only delay, but it meant that his good friend, Floyd Bennett, was so seriously injured as not to be able to accompany the expedition when it eventually did get under way.

NIGHT and day from then on we worked to rebuild the "America." This time when it was completed Commander Byrd insisted on tests and more tests. His confidence had been shaken; when so much was at stake, he had to be sure; and then, too, he may have been playing for a little time in the hope that Floyd Bennett could go along after all.

Byrd knew he had to take off with a tremendous load; he knew the fate of one of his predecessors on a like occasion, on the very field he intended to use—Roosevelt Field, at Mineola, Long Island; the man he would have implicitly trusted with the delicate job (Floyd Bennett) could not be at the controls. Even though he had seen Bernt Balchan in action at Spitzbergen and, subsequently, here in the United States, and although Bert Acosta had the reputation of being one of the most brillant flyers of the time, he was possibly more questioning than he would otherwise have been.

But the test flights alone did not hold up the flight; the runway which Mr. Fokker insisted upon having constructed had something to do with the postponement and, more particularly, the weather delayed matters.

During the last few weeks we practically lived at the Garden City Hotel. For two weeks we were afraid to be out of sight of the plane for fear they would get off without our being present. In the midst of it all, Lindbergh flew into New York and on to Paris. In fact, at the very instant we were assembled at Roosevelt Field to behold the christening of the "America" with all the pomp and splendor the occasion warranted, news came that the unheralded man who had come out of the West had achieved the victory.

What need now to hurry? Commander Byrd had always maintained his expedition was not a race, that it was a flight scientifically projected, to be scientifically executed. Like the proverbial luck of Dick Byrd, one of *the* days which should have been a gala occasion for him was, by a cruel stroke of fate, turned into the celebration of another's victory. He took his disappointment in the usual Byrd fashion.

Anthony Fokker suffered far more, for Lindbergh flew a Ryan airplane instead of a Fokker, and Fokker remembered how his company had perfunctorily advised Lindbergh, when he inquired about a Fokker airplane for his flight, that we had none available for such a purpose! This action was taken by our company particularly because of the leaps which Lindbergh had made shortly before then from mail planes, plus the fact that when we sold Fokker planes in those days we rather picked our customers as well as their pursuits.

The coming transatlantic flight was not the only expedition in the minds of either Byrd or Fokker those days. The inveterate explorer was not content with flying over the polar regions of the North; he needs must be the first to fly over the South Pole also. And while weather and tests were delaying his ocean venture, plans were being made and funds being collected for the Antarctic exploration.

Fokker was not immune to the virus of exploration. Always looking for ways and means to spread the honor of "Fokker" to the four winds, he could not rest until some additional spectacular exploit would be accomplished in a plane bearing his name. Therefore, he was using these disappointing hectic days of waiting to interest Byrd in equipment for his South Pole expedition.

Eventually he succeeded in getting two contracts, one for his Holland company to build another trimotor; the other for a single engine cabin plane, to be built by his American company. Construction of the first was in progress before Byrd flew to France, and Balchan had been commissioned by Fokker to superintend the construction of several details in this ship while he was abroad.

AFTER what must have seemed to Byrd and his crew: Acosta, Balchan and Noville, months of waiting, "Doc"

Byrd in his sealskin flying suit. This suit afforded the greatest protection against Antarctic cold.

Kimball, the weather prophet and guiding friend for all the well known ocean flyers, gave the signal, and the flight began. It began while Fokker was sleeping at his home at Alpine-on-the-Hudson! That was the first night for weeks that he had listened to his friends' request that he get some sleep.

(*Continued on page* 50)

XUM

Foreign Air Mail Possible

POSTOFFICE Department officials are watching with the deepest interest the recent long distance hops made in the air which are attracting the attention of the entire civilized world.

The continuous flight of over 5,000 miles from the United States to Turkey accomplished by Russell Boardman and John Polando during which they faced great difficulties caused these officials to declare today that the carrying of the United States mails to far distant points is beginning to look easier than it did some months back. In fact, it was pointed out that the period of time when mails will be flown from the United States to Great Britain and Continental Europe is not so very far off.

The Postoffice Departments of the United States and Canada are in possession of much valuable data concerning weather conditions over the route from Canada to Southern Greenland, Iceland, the Faroe Islands, to Denmark and Great Britain. It is this route which may be selected as the first one over which mails are to be flown to Europe.

The idea of a Southern Trans-Atlantic air mail line, by way of Charleston, Bermuda, and the Azores to Continental Europe has not been abandoned by the department, but planes will have to be built which will insure a greater degree of safety in flying over such a long water hop before this route can be established.

The proposed Northern route, however, could be flown the better part of the year, and the equipment is already on hand or could be procured with very little delay. In addition, the water hops are comparatively short, not one of them being more than 800 miles.

The Annual National Balloon Race

Photo © Walter E. Burton

OUR photograph shows the entries for the 1931 National Balloon Race, Akron, Ohio, all inflated and lined up for the start. This is quite an impressive assembly of gas filled spheres, but a great deal of interest attaches as well to the method by which the photograph was obtained.

This photograph, which shows an unusual distribution of light and shade, was taken by infra-red light instead of ordinary daylight. This is the so-called "black ray," which is invisible to the eye but which is capable of affecting properly prepared photographic films. As might be expected, all blue and green surfaces appear black in the photograph, while the reds and oranges are accentuated.

How Many Parts in a Ship?

THE newest Army single-seater pursuit plane, which is the smallest aircraft produced by the Boeing Airplane Company, has over 30,000 different parts in its assembly. Of this large number of components, 3500 are totally different.

Company officials report that 519 different kinds of raw material and 813 different kinds of semi-finished or finished parts are required. This is exclusive of the Wasp engine and the various instruments installed on the plane.

And Now Comes the Glider Train

Showing the "locomotive" in center and glider "box cars" at right and left.

EVERYONE likes to have an opportunity for patting themselves on the back, and our opportunity has now arrived. You will no doubt recall that we predicted the arrival of the aerial train of gliders 'way back in our November, 1930, issue, and, further, outlined the scheme on the front cover of that issue. And now the accompanying photograph shows that aerial trains or trailers are a reality in fact as well as fiction.

As will be seen from the photograph, this train consists of one large powered airplane which acts as the locomotive and behind it are the two gliders that are towed by the ship. By this arrangement it is possible to drop off "cars" and freight at various points along the route without hindering the progress of the large planes.

This train was a feature attraction at the National Glider Meet held at Elmira, N. Y. The glider at the left is piloted by Walter Ingram, the right glider by Jack Conklin, while the powered plane is operated by Copeland and Crowther.

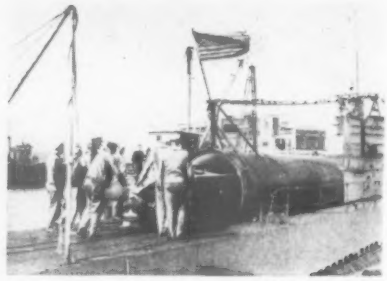
Wife Pilots Husband on Vacation Tour

A TYPICAL American wife set her husband down in a Los Angeles airport the other day in a snappy three-point landing and with a wave of her hand gave some rapid fire orders for the care of her trim little Waco plane.

They came from Michigan, Mrs. Harry Britton and her husband, Major Harry Britton. The major is a prominent physician and his wife is the possessor of a private flying license with a whole year full of hours in the air.

When it came time for her husband to take his vacation she just bundled him into her natty little airplane—and off they went. They made 2,400 miles in short hops; the longest was 516 miles. They propose to go back the same way.

Carrying Planes Aboard Submarines



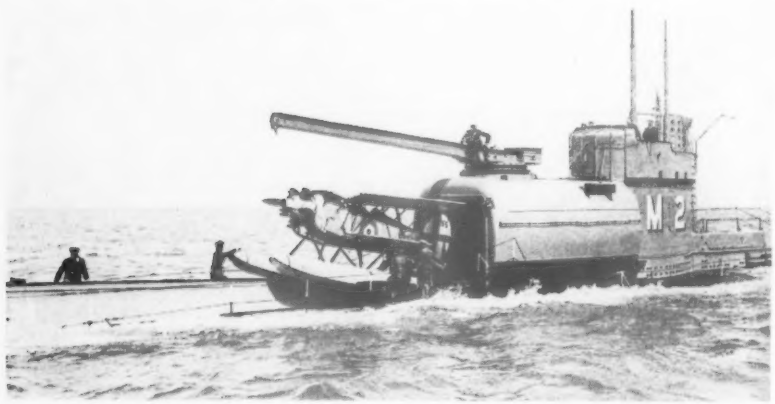
Two views aboard the U. S. Submarine S-1 showing how the peanut plane is stowed away.

WE now have an opportunity for comparing the current practice of handling airplanes on board submarines, the two pictures above showing the method of the U. S. Navy, while the lower photograph represents the method now adopted by the British Admiralty. Light plane builders have much to learn from these photographs, since they indicate the possibility of storing a small airplane in a very limited space.

The first photograph shows the crew assembling the Peanut plane on the deck of the United States submarine S-1. This is an exceedingly small plane and folds up in very small space. The other photograph shows how the airplane is stowed away into its tube "hangar" for protection when the ship is submerged or when the decks are awash. The wings are folded and the pontoons are detached when inserted into the tube.

The photograph of the British submarine carrier shows a somewhat different arrangement of the hangar. This is the British aircraft carrying submarine M-2 from which the miniature airplane is being removed for transfer to the catapult on the forward deck of the submarine. Upon lighting on the water after its return, the airplane is lifted to the deck by a crane and is then packed back in the tube.

The photo below shows how the British Navy carries submarine aircraft.



Clever Air Speed Check

WALTER J. SHAFFER, first pilot on one of the big airliners that fly over the New York-Richmond route, turned the controls of his plane over to the copilot while flying at 3,000 feet recently and walked back into the cabin to greet the passengers.

One passenger had a slip of paper with pencil marks on it before him. "We're making 118 miles an hour," he said to Shaffer. Which was exactly right, according to the air speed indicator the pilot had just left.

"How did you know?"

"Well, those telegraph poles down there are clipping by at the pace which shows me we are making that," the passenger said.

An Expensive Shipment

PILOT H. J. Kelsey had an iron air "passenger" paying a $750 fare to Barranquilla, Colombia, South America, when he hopped off recently for a flight over the southern transcontinental air route.

The Standard Oil Company, finding a well operation at Barranquilla halted for lack of a 175-pound cast-iron casing plug and that a month would be required to get it there by boat, dispatched it on the 4,500-mile journey by airplane. Because the plug was too heavy for shipment by air mail, it was sent at full passenger rate. From Dallas the plug went to Brownsville, Texas, and thence to its destination in six days.

Thunderheads Provide Plenty of Thrills

IF ANY promising young airmen or veterans too, for that matter, have had occasion to wonder what happens to a plane when it is sent into a "thunderhead" ask Pilot Ralph C. Wensinger. Pilot Wensinger makes daily weather tests for the United States weather bureau at Cleveland, Ohio.

Wensinger can give first hand information, for he just had one of the most thrilling flights in a "thunderhead" a man has ever had and lives to tell of it.

A thunderhead is a towering mass of cottonlike clouds which rise sometimes to a height of several miles. One was formed the other day when he made an ascension to 18,000 feet. To see what it was like to get into one, he purposely headed straight for it.

Once inside so great were the forces that it took the ship out of his control entirely and shot him upward at 1,400 feet a minute, and at the same time pushed him sideways something like 70 miles an hour.

"My plane was thrown around as I had never known a plane to be before. I was blind, of course, in the cloud and didn't have the least idea what position I was in.

"My instruments were useless, due to the rapid gyrations of the ship, except for the rate of climb indicator, which showed that I was being lifted 1,400 feet a minute.

"I pushed the stick forward and dived until the air speed indicator showed that I was going 165 miles an hour, and still my downward speed was less than the rate of the upward draft.

"It seemed years, but it was only a few minutes later that I broke out of the cloud still diving at 45 degrees."

This nerve racking, hair raising experience evidently wasn't enough for Wensinger, however, who spotted another thunderhead, of smaller size, and headed once again for this one.

"If anything," he said, "the second had worse winds than the first. This time the updraft carried me to the mushroom top of the cloud.

"There the updraft and the plane ceased rising at the same time, like a fast elevator hitting the ceiling. I kept on going, however, my safety belt having become unfastened in the jolting of a few seconds before.

"The only things that kept me from being thrown out were my parachute, which caught against the cowling, and my heels which hooked under the seat.

"I was away from the controls entirely and the plane was blown sideways by the strong air current which spread horizontally over the top of the cloud."

In due time "Investigator" Wensinger brought the plane under control and vowed that now that he knows what happens when a plane enters a thundercloud, he's going to steer clear of them in the future.

XUM

Bam! You're Now a Caterpillar!

If you can pass the strenuous initiation test, you have joined the most exclusive club in the world.

by

MAJOR FALK HARMEL

Col. Lindbergh, fourth degree member, taken immediately after his second jump.

HOW does the occupant of an airplane feel when, without warning, he is suddenly confronted with the realization that he must trust his entire future to his parachute. That this piece of silk, some 18 feet in diameter, is the only thing intervening between life and death? What thoughts are flashing through his mind as he is making hasty preparations to leave the plane?

There is no time for sililoquizing. He has reached that stage of existence where he simply must gamble with his life. The popular expression "No risk, no gain," is superseded by one, in effect, "Risk, or you lose."

The Army Air Corps is endeavoring to make a study of the psychological phase of the Caterpillar Club initiation ceremony by requiring those of its personnel making emergency parachute jumps to fill out a questionnaire setting forth the causes leading up to the jump, also their experiences, feelings and reactions before, during and after such jumps.

Some of the Army Caterpillars wrote lengthy reports on the causes leading up to their initiation, but politely ignored any reference to their personal feelings or reactions. Others were quite frank about the matter, and what they said furnished food for considerable thought. Still others remarked that they were too busy trying to get out of the airplane to think of anything else.

Ever so often a report furnishes a new angle on the mental reactions of the jumper. Sergeant Gerald J. Slorf, Air Corps, who was initiated last December at Wheeler Field, near Honolulu, Hawaii, expressed a thought which had never been mentioned before in any of the previous reports submitted. He stated that when, through some mechanical failure, the control of the plane was rendered inoperative and the pilot ordered him to jump, he unfastened his safety belt, left the ship, and did not waste any time in pulling the parachute ring, or rip cord, because he "was anxious to feel something holding him up." To use a popular slang expression, the Sergeant certainly "said a mouthful."

"Jimmy" Doolittle, the famous ex-Army flyer, who was summarily initiated into the Caterpillar Club during the National Air Races at Cleveland, when the wings of his plane started to disintegrate following some "stunt" maneuvers, used just 38 words in the official report covering his jump. Oh, yes, this sterling flyer, who is modesty personified, is very close-mouthed. But he is an entertaining talker once you yet him started.

One newspaperman succeeded in obtaining an interview with this flyer, whose name belies his deeds, and turned the trend of conversation to his Caterpillar Club initiation. "Now a peculiar thing," said Jimmy, "is that when you are falling through the air, so far up, and tumbling over and over, you haven't any sense of direction. You do not know which is up or down, unless you can focus on some reference point, like a cloud or the earth. I could not see a thing."

When Doolittle pulled the rip cord and waited for what seemed to him an hour without the chute opening, he said to himself, "By gorry, if this thing doesn't open quickly I'm a goner." It appears that Jimmy didn't give the rip cord a sufficiently long pull. Puzzled for a second, he tried another pull at the rip cord, and it worked. If Jimmy was fazed by his initiation, no one knew about it, for he lost no time in going to the Operations Office at the Cleveland Airport, asked and received another ship, and staged before the immense throng at the Races one of the finest exhibitions of acrobatics they had ever witnessed.

MOST of the Caterpillars, or "Silk Sailors," as some call them, stated in their reports that they experienced no sense of falling until they neared the ground, when they realized that the earth was quickly rushing up to meet them. All of the Caterpillars are of a unanimous opinion upon one point, and that is their feeling of immense relief upon finding, after yanking the rip cord, that the parachute was functioning saisfactorily.

When all of his skill proved of no avail in his endeavor to bring his plane out of an outside spin into which it had fallen following an Immelman turn, Captain R. C. W. Blessley, a veteran Air Corps pilot, released his safety belt and was immediately catapulted into space. Surprised at the ease with which the rip cord came out of the pack, he immediately became deeply concerned as to why the parachute was not opening. As a matter of fact, the 'chute opened almost immediately.

As one veteran Army flyer, Major Horace M. Hickam, expressed it: "The impression I have of myself at the moment of unbuckling my safety belt and preparing to jump was that of a slow motion picture. I simply could not make my hands move fast enough. I watched them at work but seemed unable to speed them up to any extent."

Major Hickam became a Caterpillar when his plane collided with one piloted by the late Major Harold Geiger during the course of aerial combat practice at Langley Field, Va. "My actions in preparing for and in actually making the jump seemed to be performed automatically," stated Major Geiger, who was initiated at the same time as Major Hickam. "My brain was perfectly clear then and I thoroughly appreciated what I had to do. I had no particular sensations before leaving, other than the realization that a parachute jump was necessary, and that I must do three things; first, unfasten my safety belt; second, stand up on my seat and dive out of the plane as far as possible; and, third, after I was clear, pull the ring. During this time my brain seemed to

Capt. Ira C. Eaker, a prominent caterpillar, carrying two parachutes.

function automatically without any effort on my part."

"It seemed the natural thing to do," was the comment of Lieut. Will W. White, also an ex-Army pilot, when a collison in the air was the urge for prompting him to bid a hasty adieu to his air chariot.

"I remember a surprise at the quiet during the parachute descent," he continued, "and even greater surprise at the unexpectedly easy landing. It was after the thing was all over that all the queer feelings came. The experience led me to believe that one needs no practice or coaching about the use of the parachute; if the time ever comes to use it, one will do it more or less instinctively."

Prophetic words were those uttered by Lieut. White, who is one of the "Early Birds" of the Caterpillar Club, being No. 8 on the present list of nearly 400. It can be stated here without reservation that about 95% of the persons who made emergency parachute jumps had no previous experience in parachute jumping.

IT IS interesting to record that several "Silk Sailors" were so intent on getting out of their plane that, after launching themselves into space, they forgot that very important formality of pulling the release ring. Happily, they awoke in time to escape the extreme penalty for their absent-mindedness.

One young lieutenant offered the excuse that he hardly realized he was falling. He added that prior to his jump he experienced a most decided "sinking sensation" when he found that his control stick had no effect on the maneuverability of his plane.

The first instance where two men jumped out of the same airplane came to pass when, during the course of some acrobatic maneuvers, the plane became temperamental and refused to come out of a steep dive. Quick action was necessary in order to leave the plane in time to permit the parachute to function properly. The passenger, an enlisted man, was slow to comprehend that the lieutenant wanted him to jump. He stalled around until the pilot became hysterical. No one could blame him for that, for the airplane was doing everything else but stalling, and the ground seemed to be getting uncomfortably close.

The enlisted man is reported to have stated afterwards that the pilot pushed him off the plane. The pilot claimed he had no recollection of performing such an act. Anyway, the parachute saved both, and there were no hard feelings.

They say that "self preservation is the first law of nature." This was certainly borne out in the case of Art Smertz, professional parachute jumper. Smertz set out to break the record for a free drop from an airplane before pulling the release ring. He carried a commercial parachute, but was prevailed upon by Lieut. Russel L. Maughan, the first Dawn to Dusk Transcontinental Flyer, to carry also

Jimmy Doolittle, second degree member, disguised as an Admiral, after winning the Schneider Seaplane race, 1925.

the Army parachute. It was lucky for Smertz that he accepted the proffered chute.

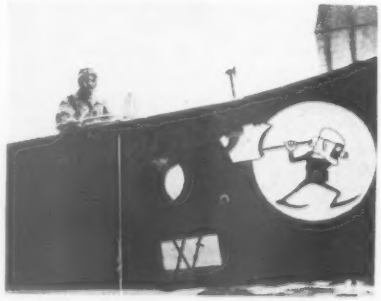
When the airplane reached an altitude of about 4,500 feet, he leaped into space. After dropping what he estimated about 3,000 feet, he decided it was high time to open his parachute. That 3,000-foot drop was too much for the commercial chute. The harness broke, and Smertz, severely jarred and injured internally, was in a fair way of continuing his free fall all the way down to the ground.

"In a semi-conscious state," he afterwards asserted, "I remembered the Army parachute on my back, and just before I lapsed into unconsciousness I managed to get it open. I do not remember anything else after that."

It may be assumed that almost every pilot at one time or another debated with himself as to what he would do if the time ever came for his initiation into the Caterpillar Club. Once initiated, however, he remains a Caterpillar for life, with such advantages as no dues to pay and no meetings to attend.

The feelings of Donald H. Stuart, Air Corps Reserve flyer, initiated following an air collision, may be appreciated from his statement that, after he located and pulled the ring, "the parachute opened fully after a few hours of deliberation."

Sergeant A. B. Jewell, passenger in Stuart's plane and hence initiated at the same time, stated that when he made ready to jump he was unconsciously pulling his rip cord. When, as



Technical Sgt. Jewell, caterpillar club, seated in the rear gunner's cockpit of a large bomber.

the boys say, he "got hep" to what he was doing, he was all acceleration and he had no more than cleared his ship when the chute was fully opened. It surely was his lucky day.

"DON'T pull the rip cord until you are clear of the ship," is the slogan of the Army Parachute School at Chanute Field, Rantoul, Ill.

Several flyers paid with their lives for being *over*-zealous on that particular point. One flyer, Captain Lloyd Juelson, exhibited rare presence of mind when, finding it necessary to desert his ship immediately, was dismayed to see his parachute *fully opened in his cockpit just as he was about to step overboard.*

Stooping low, he grabbed some of the folds and shroud lines of the opened chute and flung them out to the breeze. Just before he stepped out, he gathered up the remainder of the parachute, tucked the silken mass under one arm and set sail for terra firma. Happily, no part of the parachute became entangled in the airplane. It rapidly assumed its proper shape and Captain Juelson floated earthward.

Flying Cadet J. D. Cleveland, following an air collision, found his initiation a most strenuous one. His experience while endeavoring to free himself from the disintegrating airplane proved a veritable nightmare. When he pulled the ripcord, it came out in his hand so easily that he remembered in the split second of looking at it and thinking: "My God! It's broke!" About that instant the 'chute opened.

Dick Bowman, piloting for the Pacific Air Transport Co., and flying over the Tehachapi Mountains in California on a dark and sticky night, found himself in a severe storm. Flying blind, tossed by the elements, and striving for over an hour, with all his senses alert, to keep his plane on an even keel, he found himself in a fast spin, the plane evidencing no inclination to level out.

There was only one thing left for Dick to do, and when his parachute eased him down in a wilderness, he built a fire and sat beside it until morning.

"I don't recall anything very romantic," Bowman stated, in referring to his experience. "I distinctly remember, though, that it was a wonderful feeling to know that I did have a parachute and could get off and walk. I also recall that I threw away a perfectly good cigar that I had been chewing on for fear that I should swallow it."

Captain Ira C. Eaker, noted Army flier, said he experienced no thrill in his jump, his greatest sensation being one of relief at getting clear of his plane.

Colonel Charles A. Lindbergh, High Mogul of the Caterpillar Club by virtue of his four emergency parachute jumps, received his first initiation while a Flying Cadet at the Air Corps Advanced Flying School at Kelly Field,

(*Continued on page* 49)

XUM

Average Speed Increases

THE average high speed of approved type airplanes has increased approximately 10 miles an hour in four years, according to a recent study made by the Department of Commerce.

The average high speed increased from 117 miles an hour to 126 miles an hour during the period studied. This was accompanied by an increase in average landing speed from 57 to 60 miles an hour.

It was found also that the use of more powerful engines to achieve greater speed had resulted in a decrease in power loading or, in other words, a decrease in the number of pounds supported in the air by each unit of horsepower. Wing loading, on the other hand, increased, that is, the average amount of weight supported by each square foot of wing area became greater.

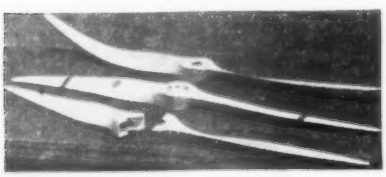
Average pay load decreased in proportion to gross weight, and pay load became less in proportion to horsepower. It was found, however, that the larger airplanes were most efficient from the standpoint of pay load carried in relation to their size and horsepower.

Heath Produces Hollow Prop

METAL gets tired and this tendency to become weary is the greatest menace to all-metal propellers.

In an effort to overcome metallic fatigue, the latest Heath light plane propeller is hollow.

It is made of a special light 4% magnesium alloy. As shown in the accompanying photograph, the new propeller has exactly the same outside form as the regular hardwood propeller produced by the Heath company, but it has



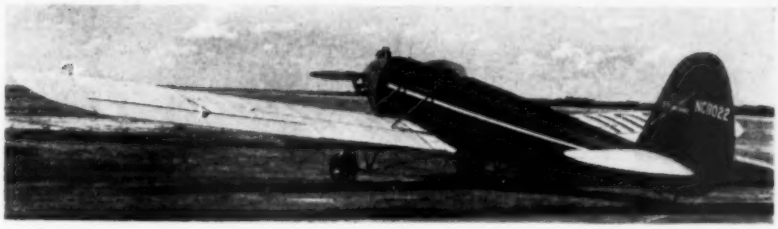
Group of new Heath propellers.

a hollow hub section and blades which are hollow for one-third their length from the hub.

This prop weighs only five pounds as compared to three and one-half pounds for a hardwood propeller of the same size, and it costs only about twice as much as a wooden one.

The propeller with the bent blade illustrates the durability of the new type. It later was straightened and used many hours in flying a light plane. A wooden one would, of course, have been destroyed. During a bad landing, a Chicago aviator found that a slice had been taken off the tip of a pontoon by his hollow metal propeller without seriously damaging the propeller tips.

The New Spartan Monoplane Trainer



Three-quarter view of new Spartan Monoplane

KNOWN as the Spartan C2-60, the new open type low-wing monoplane built by the Spartan Aircraft Company promises to duplicate the popularity of other Spartan products. The two pilots' seats are side by side in an open cockpit suitable for training purposes or for private ownership.

Equipped with a three-cylinder Jacobs radial air-cooled motor rated at 55 h. p., this ship is said to have a high speed of 93 mph. and a cruising speed of 81 mph. It carries sufficient fuel for a 320 mile range.

A Clark-Y wing section is employed with a total surface of 162 square feet. The wing is attached to the lower fuselage longerons and is braced to the top longerons through parallel steel wires. The span is 40 feet. Specially strong and well arranged bracing is carried out through all of the main units, so that the ship is exceptionally sturdy.

Organization of Amateur Pilots Completed

A NEW association has recently been organized for amateur pilots under the name of the United States Amateur Air Pilots Association. Its object is to advance the interests of private pilots and to perform the same functions as the several amateur athletic organizations.

The Association's immediate purposes are:

(1) To establish rules and laws under which amateur pilots are defined and certified as such;

(2) To codify regulations governing national and international amateur flying events, both competitive and non-competitive;

(3) To register individual but uniform aircraft insignia for every private plane-owner in the country;

(4) To compile actuary statistics on amateur flying and secure constantly decreasing insurance rates for all sportsman plane-owners and pilots.

An equilateral triangle over a short horizontal bar is the insignia contour adopted by the Association, 334 flying sportsmen have already registered distinctive identification symbols for their planes in varied colors fashioned about that basic design.

Heraldry, yacht-club burgees, personal initials and other individualized markings furnish the motifs for the insignia which not only clearly distinguishes private planes from commercial aircraft but which renders their ownership apparent from afar. An amateur air pilot register, listing every private flier in the country and their insignia, is to be issued annually by the association.

Typical insignia developed for members of the association.

The Dirigible *Is Not* Practical

WHERE will the lighter-than-air business go from here?

Will the "Akron" soar majestically to new and greater triumphs over time and space—or will it, like so many of its famous predecessors, come to a violent and ghastly end? Is it, as its sponsors insist, an invaluable weapon of defense or, as caustic critics declare, just a $5,000,000 bag of hot air?

What is the Navy going to do with it—and why does anybody build Zeppelins anyway? When—if ever—will there be practical and reliable commercial dirigible lines? In short, what does the future hold for the lighter-than-air type of craft? Will the big bags really amount to something in the transportation field or merely turn out to be bigger and better aeronautical dreams?

The past few years have produced a lot of fine predictions, prophecies and promises pertaining to dirigibles—but little results. These predictions could not conceivably have been based on past performances, for the history of the big airships has been shockingly bad. They attained the zenith of their fame fifteen years ago during the early years of the war, through the German Zeppelins' raids on England and France.

When adequate defenses were developed—as they quickly were—the Zeps, hopelessly vulnerable to attack, gave way to the giant airplanes. By the end of the war they were generally considered obsolete.

Their early post-war activities constitute a gloomy chronicle of sudden disaster and wholesale death. In quick succession the British R-33, R-34 and R-38 met unhappy fates. The French "Dixmude," formerly the German L-72, vanished at sea with all aboard. The Italian-built "Roma," a big semi-rigid belonging to the United States Army, cremated its crew. The United States Navy, copying German designs, built the "Shenandoah," considered a splendid ship until the day it fell apart in mid-air in an Ohio squall.

"The record of past dirigibles is not an enviable one. I can see very little in the future for the big gas bags."

Says
BOGART ROGERS

As a result of these misfortunes England suspended dirigible activities entirely—as did France, Belgium, Italy and Japan. Treaty provisions forbade Germany building Zeppelins for her own use. Just when it began to appear as if the dirigible might fade into oblivion the United States Navy, which had been forgotten when the confiscated German war ships were distributed among Allies, came to the rescue and ordered the present "Los Angeles" from the Zeppelin works at Friedrichshafen.

England thereupon decided to try again and launched plans for the R-100 and the ill-fated R-101. Italy puttered mildly with large semi-rigids, one of which carried General Nobile to disaster in the Arctic. The other nations remained aloof.

During the past three years of renewed activity the "Graf" has performed spectacularly—albeit somewhat uselessly; the "Los Angeles" has made some admirable flights; the R-100 staggered hazardously across the Atlantic and home again; and the R-101 contributed the greatest air disaster of all time.

At present the "Graf," R-100 and "Los Angeles" are the only giant dirigibles extant. The "Akron" has just been completed for the United States Navy and may perhaps be followed by a sister ship, now designated the ZRS-5.

The numerous smaller airships and blimps which soar over cities flaunting advertising signs should not be confused with the Zeppelin type of craft.

AMERICA'S staunchest advocate of the big gas bags is Rear Admiral William A. Moffett, for the past nine years chief—and a very capable chief, too—of the Bureau of Aeronautics.

In the face of discouragement and disaster he and a small group of dirigible disciples have stubbornly fostered a Navy Zeppelin development plan. Scoffers have scoffed, knockers have knocked, Congress has backed and filled but Admiral Moffett has plodded resolutely on. He has faith in dirigibles, thinks the Navy should have many of them and vigorously champions their cause.

(*Continued on page* 52)

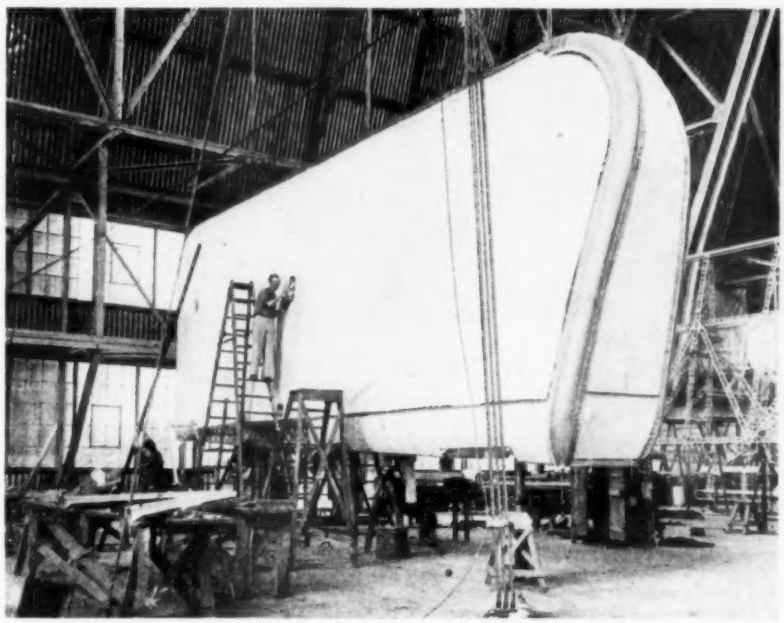
One of the eight swiveling propellers of the "Akron." Combined with reversible motors, the ship can be propelled in almost any direction.

XUM

The Dirigible *Is* Practical

"The 'Akron' concludes a notable series of experimental dirigibles. It will be of inestimable value in time of war."

Says
WALTER E. BURTON



Some idea of the size of the "Akron" can be gained from this view of a mechanic working on the rudder of the big ship.

OF the millions of persons who have seen the new Zeppelin or read about it, there is probably no one who has not wondered just how the airship would behave in battle.

Lying peacefully in its nine-acre steel kennel, the "U.S.S. Akron," new flying scout of the United States Navy, looks more like an overfed, genial poodle than the swift flying bulldog of the air that it really is.

One day I talked with Lieut. T. G. W. Settle, U. S. N., about the "Akron's" future. Lieut. Settle, as chief of the Naval Inspection Office at Akron, has been keeping his eye on the new ship ever since it was in the blueprint stage. Aided by his vivid descriptions, I was able to form an exciting picture of the way in which the "Akron" would render invaluable service to its country—and to the taxpayers who are footing the bill—in time of war. The picture looks something like this:

Information has been received that the enemy is massing a powerful fleet of surface vessels in the Pacific, some few thousand miles north of New Zealand.

The United States fleet, in formation, is proceeding towards this spot. Its main body is several hundred miles off the Mexican coast, vessels forming the screen are a hundred miles farther out, and the scouting line is 2,000 miles beyond that. The command is issued for the airship scout "Akron" to be prepared to proceed at once to the scouting line and relieve its sister ship, the ZRS-5 named, let us say, the "Lakehurst."

At this moment, the "Akron" is at its birthplace in the city of Akron, having been rushed there from Lakehurst for minor repairs and adjustments, following weeks of patrolling in the Panama area. The repairs are completed, and the ship is made ready to fly. Fuel tanks are filled to capacity, ballast is taken on, ammunition and bombs are rushed aboard, and other details are attended to. The crew of a dozen officers and 60 men is ordered aboard.

Meanwhile, the aerologist studies weather reports and maps. Calculations are made to find the maximum altitude at which the ship will be likely to fly, and just enough helium is permitted in the cells to fill them fully at this height. The captain and other officers watch closely local weather conditions. A wind at a velocity varying from 30 to 35 miles per hour is blowing past the dock. Not the best of weather for taking the ship out.

Finally, direct from the fleet commander-in-chief to the radio cabin of the "Akron" comes the command to proceed with all speed. Instantly everything is in action. An "all hands" command is issued, and each man takes his post. . . .

In anticipation of the order to move, the ship has been weighted off—ballast controlled so that it weighs the same amount as the air it displaces—while still in the dock, and the eight engines have been warmed up. The mobile mooring mast, mounted on three huge caterpillar tractors, supports the nose of the ship, and cables along the sides are attached to trolleys that run in tracks along each side of the dock and far out into the field at each end. This arrangement is suggestive of the ship-handling facilities at the locks in the Panama Canal.

Because of the presence of men experienced in ground handling of the airship, no portion of the crew needs remain on the ground, so the "Akron," once out of the dock, will be ready to take the air immediately, after a final weighing off.

A man presses a button, and the two huge "orange-peel" doors forming one end of the dock swing open. In six minutes the operation is completed. The motor in the traveling mooring mast has been idling. The ship's engines are stopped. Members of the ground crew are at their posts along the sides, han-

(*Continued on page* 54)

The "Akron" almost completed. This "trick" photograph was made inside the hangar by patching together twenty-four side views of the ship taken from various positions.

Mammoth Sikorsky Passenger Transport

View of the Sikorsky S-40 transport designed for carrying 40 passengers. When loaded it weighs 34,000 pounds.

ALL previous attempts at producing large passenger carrying ships sink into insignificance when we view the new S-40 Sikorsky Amphibion. This ship is designed to carry 40 passengers amidst the most comfortable and luxurious surroundings, and has put up an excellent performance during the recent trials and test runs.

Powered with four motors, this mammouth craft, designed for a gross weight of 34,000 lbs., left the waters of Long Island Sound at Stratford in 19 seconds. This, a natural takeoff, is especially satisfactory in view of the fact that there was little wind and a calm water surface to make takeoff conditions difficult.

A cruising speed of 110 miles an hour was maintained with the engines turning up 1,650 rpm., while the landing speed was under 60 miles per hour. Cruising speed on any three of the four engines is 95-100 mph. Two planes of this type are now in the process of construction for the Pan-American Airways for use in their South American service.

The Sikorsky S-40 is a high winged monoplane, powered by four Pratt and Whitney Hornet, 575 hp., engines. The motors are of the tractor type installed in nacelles supported from the wing. The wing span is 114 feet, while its width is 16 feet. The length over all is 76 feet 8 inches and gross load of the ship 34,000 lbs. The plane is capable of a top speed in excess of 130 mph. Further tests are being made to substantiate this figure. And with a gasoline capacity of over 1,000 gallons, it has a cruising range of 1,000 miles.

An enormous amount of time and research has been put into this seaplane. The first wind tunnel tests were run in October, 1928. Approximately 300 hours of time were spent on testing the engine models with different cowls alone. The date of the first water tests on the hull was April, 1929. Approximately 2,000 runs were made at different speeds in the water and river basins, corresponding to approximately 200 hours of actual testing.

Many interesting features are incorporated in this airplane. Varied problems had to be overcome, due to its size. Comfort for the passenger has been considered a prime factor in the S-40. The hull of this ship is a foot and a half wider than a Pullman car, allowing ample room for large, comfortable lounging chairs. Five hundred square feet of half-inch thick sound-proof material under walnut panels is used to reduce the noise to a minimum.

All interior draperies, rugs, curtains and furnishings are fireproofed. In the aft compartment of the ship is installed an icebox, an electric stove and a steward's pantry, also room for extra storage space. There are electric fixtures in each compartment; call system for the steward, and individual ventilation units. Emergency food, drinking water, etc., make this plane independent at sea for an indefinite length of time. Six life-saving rafts, with emergency rations and water, are conveniently located at each exit.

Age Is No Bar to Flying

ADMIRAL KING-HALL of England revealed the other day that a friend of his, Captain J. W. C. Martyr, had reached a stage of proficiency in airplane pilotage sufficient to enable him to qualify for an "A" license (the lowest English rating). Not an uncommon accomplishment nowadays; but Captain Martyr, at the time of his flying lessons, was *76 years of age!* His instructor told him he could easily obtain the license if he cared to take the examination.

British qualified air pilots vary in age from 17 to 70 and more, the youngest airman of them all being competent to control an airplane before he was 14, though his age prevented him from taking his ticket then. Many of the Royal Air Force officers in the higher command still fly regularly, though in later middle age, and among club members and owner pilots are to be found several who have passed sixty and one or two who are more than seventy.

Schneider Trophy Race

THE international Schneider Trophy contest—the world's greatest speed event—will be held on September 12.

The new British contestant is a Supermarine S6 monoplane similar in general appearance to the craft which won the Trophy at an average speed of 328.63 miles an hour in 1929. It is slightly larger than the 1929 machines, because of the need to carry a bigger load of fuel for the more powerful Rolls Royce engine, and provides increased radiator cooling service.

The British high-speed pilots, under the leadership of Squadron Leader A. H. Orlebar, holder of the world's speed record of 357.7 m.p.h., have been practicing regularly in seaplanes built for the 1929 event. Five men are in training from whom will be selected the three men who will fly for Britain on September 12.

From Dezenzano, in Italy, there come reports that newly designed seaplanes, possessing novel features in arrangement of engines and airscrews, are expected to attain speeds in the neighborhood of 400 miles an hour. France is more reticent, but it is known that her new engines have been running on test for some time. Should teams representing both challenging nations come to the starting line we shall undoubtedly see the most terrific contest in the history of mechanical racing, with competing craft accelerating on the "straights" of the triangular course to velocities of nearly seven miles a minute.

World's Smallest Jumper

Harold is all packed up and ready to go.

HERE'S Harold Cannon, Jr., youngest candidate for honors in parachute jumping, all ready for action in case fate elects to make him a member of the famous Caterpillar Club.

Harold is so proud of his parachute, the smallest ever made, that he wears it on the ground. The 'chute was made especially for him and when aloft he has the utmost confidence in it.

XUM

LIGHTPLANING IN PAST YEARS

The demand for lightplanes goes back over twenty years. Some of the tiny planes now long forgotten were excellent performing ships.

by MANLEY MILLS

LIGHT planes or even powered gliders are by no means modern novelties.

It may be said in full truth that early pioneers in the lightplane produced many interesting designs with performances fully equal to or better than the performance of present day lightplanes. Unfortunately, these little ships of long ago were very expensive, so expensive in fact that they were out of reach of most flyers.

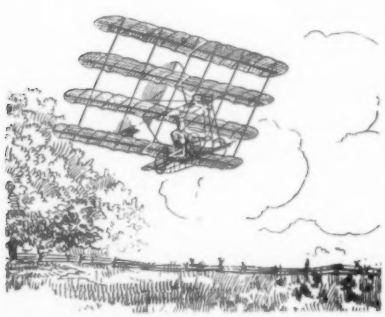
Although by far the greater number of lightplanes were built after the World War, several types were brought out in previous years. Among them, the Santos-Dumont "Demoiselle" is perhaps the best known. With a span of 18 feet and a chord of 6 feet, it had the extremely low aspect ratio of three, making the wing very inefficient.

Its overall length was 26 feet, entirely out of proportion to the span, and weighed only 250 pounds, making it one of the lightest planes of its day. For the technically minded reader, I might add that it was powered with a 30 horsepower Darracq engine of the water-cooled two-cylinder opposed type, turning a 5-foot proper at 1600 R.P.M.

The entire frame was constructed of bamboo canes to secure extreme lightness, and its general layout was very similar to present powered gliders.

In 1910, Raoul Vendome built a tiny monoplane which was both lighter and faster than the "Demoiselle," as well as better proportioned. He demonstrated its weight of only 190 pounds by lifting the plane off the ground and carrying it upon his back.

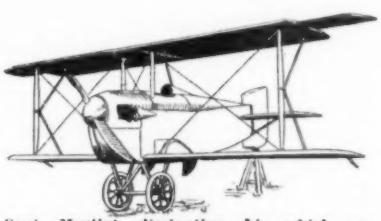
During the same year, Matthew Sellers flew in a four horsepower quadruplane at Grahn, Kentucky. The flights were not merely short hops; they were of considerable duration, and the plane was perfectly controllable and stable. The machine was a tiny four-winged affair, and was remarkable in the fact that it weighed less than eighty pounds ready to fly. It was powered with a Dutheil & Chamers two-cylinder opposed type engine of four brake horsepower. And yet, the public has the general impression that the power glider is a recent development!



Matthew Sellers in his quadruplane flying with a 4 H.P. engine.

The Santos-Dumont "Demoiselle," often called the "Infuriated Grasshopper," the prototype of the powered glider.

A couple of years later, the Vendome folding monoplane made its appearance. While it can hardly be classed as a sport plane it incorporated several features desirable in a private machine. For instance, it could be assembled or dismantled by two people in four minutes. When folded, it could be stored in a space measuring seven feet by ten by seventeen feet.



Capt. Martin's diminutive ship which presents many unusual features.

In 1916, the Curtiss Aeroplane and Motor Company built what might be termed by some wisecracker as a "miniature Jenny." It was a small scout with a span of only 20 feet and a high speed of 100 miles an hour, powered with an OX-2 motor. In some respects, it resembled the familiar Jenny.

The Martin "K-3," brought out the following year, was perhaps the most unique of wartime scouts. It was a biplane with a span of 18 feet and an overall length of 13 feet 4 inches. The Martin landing gear was retractible, the wheels folding backward and up between the wing spars into streamline housings built against the sides of the fuselage. It was powered with an A. B. C. Gnat 40 horsepower engine, and weighed only 350 pounds in spite of the landing gear retracting mechanism. Its high speed was 135 miles an hour.

Several years ago, the motorcycle engine was very popular with American lightplane engineers — no other inexpensive power plant being available—and many good designs were based on this type of motor. In the latter part of 1918, Carroll and Stupar built a biplane powered with a 15 horsepower Excelsior motorcycle engine. The span was 26 feet, and it weighed only 225 pounds.

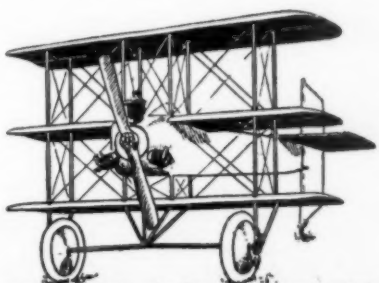
One of the most unusual of motorcycle motored planes was the Gallaudet "Chummy Flyabout," built in 1919. It was a two-seater biplane, powered with two 18 H.P. Indian motors driving pusher propellers. The span was 33 feet, and the high speed was 80 miles an hour. It weighed 600 pounds empty.

An interesting British plane, the B. A. T. "Crow," was built in 1919. It was a monoplane with a span of 19 feet and a length of 14 feet. The pilot was seated in a structure similar in size and shape to a motorcycle sidecar, the cantilever wing being mounted directly above. The engine was an A. B. C. Gnat, mounted on the leading edge of the wing, while the tail was supported by outriggers. With the aid of a wrench and a pair of pliers, the plane could be taken apart in a few moments. It weighed 225 pounds, and had a high speed of 75 miles an hour.

The Pensuiti "Caproni" was an Italian triplane appearing the same year as the "Crow." It was of very small dimensions, being 12½ feet long with a span of 13 feet 1 inch. Its landing speed of 25 miles an hour was remarkably low for such a small machine.

Another small triplane of 1919 was built by Louis Clement, a French aeronautical engineer. It had a span of 18 feet, and the lower wing was considerably shorter than the others, the landing wheels being mounted at the tips. Both the "Caproni" and the Clement were powered with the Anzani 35 horsepower engine.

Still another interesting lightplane appearing in 1919 was the Hild-Marshonet biplane powered with a 20

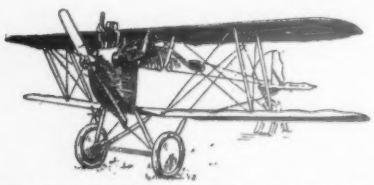


A baby triplane, the Pensuiti-Caproni, which was very compact.

horsepower engine of the manufacturer's own design. It had no fuselage in the strict sense of the word, the pilot being seated in a stream-lined nacelle. An outrigger of boxed cantilever construction supporting the empennage was attached directly behind the pilot's seat. The cockpit was very easy to enter, due to the unique design, and the plane could be taken apart in a few moments.

The 1920 model Ace biplane was equipped with folding wings, and was powered with a 40 horsepower Ace motor which weighed only 126 pounds. The landing gear was fitted with a skid with the rear end turned down to act as a brake in landing. The wing spread was 25 feet, but when folded it occupied a space only 10 feet wide. A high speed of 80 miles an hour was attained with a landing speed of 30 miles an hour.

The Macchi "16" was a small Italian biplane of 1920 with a span of 19 feet 8 inches. The fuselage was deep-chested and extended below the lower wings, the landing gear axle being sprung directly on the bottom longerons with shock cord. The plane could also be fitted with pontoons, making it one of the smallest seaplanes in existence. It was only 13 feet 9 inches in length, and was powered with an Anzani 30



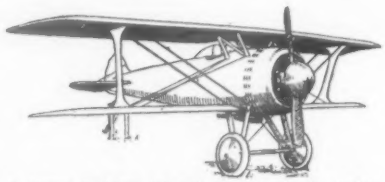
The "Planet," designed and built by J. B. Rathbun.

horsepower engine. The high speed was 83 miles an hour with a landing speed 25 miles an hour.

Another Italian machine of the same year was the Ricci "R6" triplane. The span was only 11 feet 6 inches, and the wings were of single spar construction. However, they seemed to be amply strong, for the tiny machine was put through all kinds of stunts during an exhibition at Paris. The power plant was the Anzani 40 horsepower engine.

French engineers seem to have made a specialty of very small airplanes just after the war. The Didier "Oiseau Bleu" (Bluebird) was a small twin-motored airplane. With a wing spread of 16½ feet and an overall lenth of 8½ feet, it was powered with two engines of 3 H.P., each driving pusher propellers. Another one of even smaller dimensions but powered with an A. B. C. 20 horsepower engine, was the Farman "Moustique," a triplane with a span of just 11 feet and a weight of 220 pounds.

The 1920 series of De Marcay airplanes included three interesting types of sport machines. The smallest was the "Passe-Partout," a biplane with a span of 16½ feet and a height of 4½ feet powered with an A. B. C. 10 horsepower motor. Lateral control was obtained through wing warping instead of ailerons, and the fuselage was of monocoque construction. The weight of the plane, complete with gas and oil for a two-hour flight, was 220 pounds. A high speed of nearly 70 miles an hour was attained which is remark-



A clean looking job—the S. F. A. D. lightplane.

able when one considers its small motor.

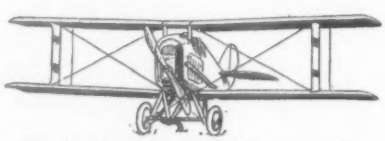
The next plane in point of size was the Sport Biplane, which was powered with a 60 H.P. Le Rhone motor and had a wing spread of 18 feet. The motor was neatly cowled in, and the propeller was fitted with a large spinner which carried out the streamline shape of the monocoque fuselage. The high speed was 118 miles an hour with a landing speed 28 miles an hour.

The third machine was a two-seater with a removable cabin fitted over the tandem cockpits. Although larger than the other two machines, it was still very small, especially for a two-place job, having a span of only 19½ feet. The high speed was 93 miles an hour and the landing speed 30 miles an hour.

Back in 1920, when the present Waco Aircraft Co. was known as the Weaver Airplane Co., they brought out a small parasol monoplane with a span of 22 feet, powered with a two-cylinder opposed 30 horsepower Marble engine. Lateral control was obtained by warping the wings, the U. S. A. 4 wing section being used for this reason since it is a thin cambered type. The fuselage was of all plywood construction.

In the same year, the Sport-Farman was placed on the market. It was a two-seater biplane with a span of 23 feet, weighing only 450 pounds. On the field, it appeared about the size of the present-day Heath Parasol. Its speed range was remarkable, the landing speed being 15⅝ miles an hour and the high speed 87 miles an hour, as measured in official tests. It was repeatedly demonstrated that it could take off in thirty yards, and in some cases, when carrying one person only, it would leave the ground after a ten-yard run.

The Deleray "Midget" was an interesting little biplane powered with a motorcycle engine. The wing spread was 17 feet with the lower wing slightly



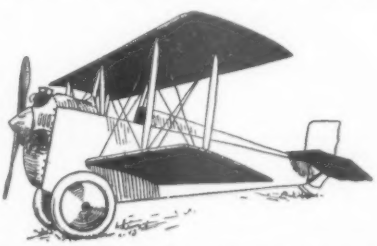
The "Ace," a popular ship ten years ago.

shorter, and it resembled the Nieuport scout of World War fame. It could be powered with practically any motorcycle motor of 12 H.P. or more.

Another successful motorcycle motored design was the Huntington monoplane with a span of twenty feet. The wings were attached to the upper longerons, but downward vision was increased by windows in the sides of the fuselage at the cockpit. It was just about as simple as an airplane could be built, and the cost of construction, without the motor, was well under eighty dollars.

The Pischoff "Avionette," appearing about this time, was a French biplane of very unusual design, with a span of 17 feet and a height of only 4 feet 3 inches. The landing wheels were set into the lower wings, and the pilot sat on a motorcycle type saddle mounted on top of a steel tube framework which took the place of a fuselage. The motor was a 16 H. P. Clerget.

At this time, Harvey Mummert built a diminutive biplane with a span of 18 feet, powered with a Lawrence 28 engine. The fuselage was of monocoque construction, and the entire plane presented a very neat appearance. It



A Macchi biplane which is not unlike certain lightplanes of today.

could make around 100 miles an hour, and had a slow landing speed.

In 1922, several motorcycle engined jobs were produced. Among these were the Heath "Feather," the "Baby Bomber" and the Irwin Meteorplane. The "Feather" was designed and built by the late Edward Heath. It was a biplane with a span of 24 feet, powered with a Thor engine. The propeller was fitted with two auxiliary blades, the purpose of which was to act as a fan to help keep the engine cool. The landing gear was equipped with a third wheel, extending out in front to prevent nose-overs.

The "Baby Bomber" was a classy little biplane with a span of 21 feet, built by O. H. Snyder. It was powered with an Indian motor which had already seen considerable service in the builder's motorcycle. The propeller was driven through a chain and sprocket reduction gear. The landing speed was only 20 miles an hour and the plane usually stopped within forty feet after touching the ground.

The Irwin Meteorplane first made its appearance early in this year. It was in all respects the same in design as the more recent Irwin creation, but was

(*Continued on page* 46)

XUM

Another Tailless Plane

A NEW model "Pterodactyl" is now being exhibited in England. Previous airplanes of this kind have taken the air, but this latest type embodies many improvements in design and promises to cause a stir among private flyers.

The "Pterodactyl" has no tail, and no fuselage in the generally accepted sense of the word. Directional control is secured by rudders at the extreme tips of the monoplane wings, and "controllers" similar to the ailerons fitted to more conventional airplanes ensure longitudinal and lateral control. A comfortable cabin for a pilot and two passengers is located between the wings, with the engine and pusher airscrew located behind it.

A notable increase in performance has been secured in this latest model, the top speed being 110 miles an hour, while the craft carries fuel sufficient for 4¼ hours cruising at about 90 miles an hour.

Plane Lands in Street

It was lucky that traffic was light.

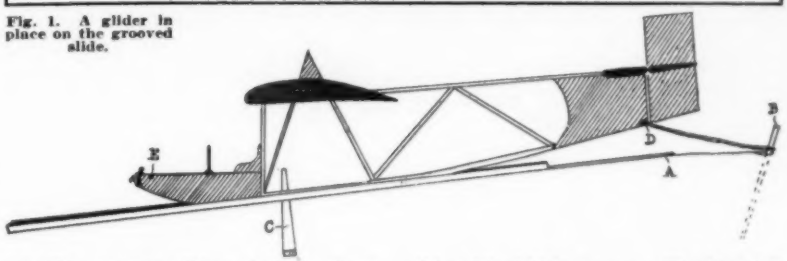
OUT of Los Angeles, the city of movie thrills, comes a thriller in real life that was not staged by a director. About 3 a. m. on a dark foggy morning Earl LaFurguy was trying to locate the Grand Central Airport when he found himself running short of gas over the city of Los Angeles. Running short of gas while over a city is not a pleasant experience under the best of conditions, but when one is surrounded by an opaque curtain of fog, matters are just that much worse.

Down he came slowly but steadily, uncertain whether he was to land on top of a skyscraper or in a tree. Fortunately, a hole in the fog opened just in the nick of time and disclosed a wet, skiddy city street, his only chance, and he took it. He throttled down his motor and took his chance with what other traffic might have been on the street at the time and, so the story goes, rolled up to a boulevard stop sign—and stopped.

It is pleasing to note that while Mr. LaFurguy violated the U. S. Department of Commerce regulations forbidding landings on public streets, he did abide by the city ordinance requiring all vehicles to stop at boulevard crossings. And this is something—you must admit.

Unique Glider Launching Device

Fig. 1. A glider in place on the grooved slide.



WHO, among glider students, have not had difficulty in getting a glider off the ground properly. It is often hard to get enough men to stretch the rubber shock cord, and even with five or six men on each end and a man to steady a wing tip, it is sometimes difficult to maintain a level position long enough on uneven ground for the glider to attain sufficient forward speed.

If more stretch is on one end of the shock cord than on the other, or if it is pulled at a slight angle with the skid sliding over uneven ground, it is very easy to drop one wing down and "ground-loop."

By the methods I describe, these difficulties can be overcome with little trouble and expense. It is only necessary to have two men on each end of a shock cord on a still day, and when a breeze is blowing, one man on each end is enough. With these methods I've taken a glider off in a 25 mile an hour gale with no trouble at all.

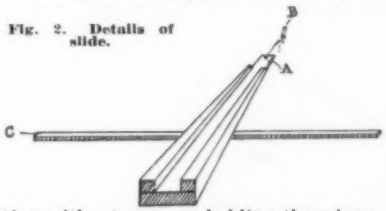
Figure 1 shows a drawing of a grooved slide for the glider skid to run in. To make this, take a 2″ x 6″ plank 20 feet long and nail on two square pieces 1½″ x 1½″—16 feet long so the groove is about three quarters of an inch wider than the glider skid. Bore a hole in plank at A, and fasten to iron stake B with about 7 or 8 feet of telephone wire. Place the grooved slide on narrow board C, 1″ x 4″—16 feet long.

The groove in the slide and top of board C should be greased with ordinary cup grease. Place the glider on slide with skid in groove. The board C should be directly under the maximum weight. Any uneven pull of the shock cord will cause the grooved slide carrying the glider to move along board C and the glider will take the air along a perfectly straight line.

The rear trip D on the glider should be tied with a 5 foot rope to iron stake B. Tie a cord from rear trip D to screw eye E in convenient reach of the glider student, who in this way, has complete control of the trip.

As the glider will leave the ground in from 5 to 10 feet it is easy for the student, when the shock cord is stretched, to bring glider to a level position without any one holding the wings. He can use the stick if a breeze is blowing, or if the air is still, he can lean his body over to bring the wing off the ground. As soon as glider is level he can trip it, for he will always be off the ground before the glider leaves the slide and he can then immediately control it with the stick. As the glider will get off the ground much faster this way, the beginner should be instructed to keep the stick always forward of neutral when leaving the slide.

Fig. 2. Details of slide.



They All Fly Now

IT IS the opinion of many people that persons of high rank seldom fly, but the passenger list of the Eastern Air Transport System, which operates with air passengers and U. S. airmail to 22 cities between New York and Miami, entirely disproves this belief.

Among the passengers who purchased tickets and flew to points served by this airline have been a prince and princess, accompanied by a royal escort of seven court attaches (this flight was made in strict secrecy), several ambassadors, members of the president's cabinet, senators, representatives, a countess, a marchesi, Vicomtesse, governors and a number of mayors.

Gliders Aid Students

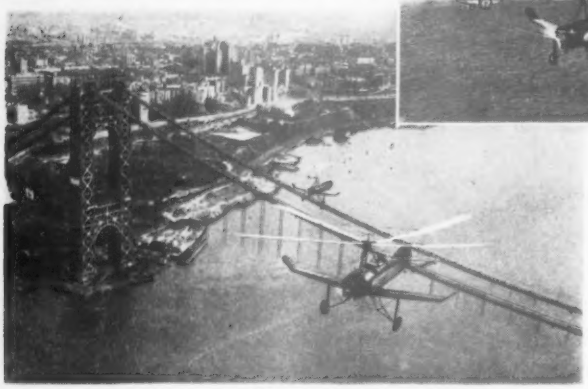
TESTS conducted with glider students have shown them to be extraordinarily capable in handling a light power ship. Virtually no instruction has been necessary for take-offs and landings, due to the fact their glider experience has consisted of many more takeoffs and landings than are obtained under the conventional power ship training.

Some glider students have been capable of soloing at once, and the large majority need less than three hours' instruction. Due to the fact that all glider landings are "forced" landings, and all glider flying is "solo" the glider pilot does not experience the mental hazard that the "dual instructed" pilot experiences on his first solo.

The How and Why of the Autogiro

THE autogiro rotor—that peculiar "windmill" like arrangement that distinguishes this type of plane from all others—*is not a windmill.* That is the first thing to remember.

Instead of a four bladed rotor whirling about, think of four small airplanes firmly fixed to stout rods—going around at a speed of two hundred miles per hour—and you have the action of the rotor. These little planes have their power off and are gliding about the center at a terrific rate as the autogiro descends.



Above this composite photo-sketch graphically shows how the giro vanes act as four independent planes gliding about a central axis. Left, two autogiros are shown flying over the new suspension bridge across the Hudson at New York City.

The blades of a windmill are set against the wind—and the device takes power from the wind. The rotor blades of the autogiro, on the other hand, are so set that they rotate from the force of the air, but being loose upon their shaft, they seemingly idle, and convert the force of the air into lift, instead of power as does the windmill.

It must also be understood that in flight the pilot has no control whatever over the blades of the rotor, and while it is true that at first they are started revolving by the motor, when they reach their speed, the motor is slipped from them for the balance of the flight. The blades of the rotor revolve from the force of the air, and from no other force.

Gravity insures motion through the air at all times because autorotation will continue constant even in case of engine failure.

An autogiro plane can stop dead in the air for a moment, that is the craft itself not the rotor. The blades of the rotor act as a parachute, as it were, and the machine is prevented from falling at a greater rate than 14 feet per second.

The blades of the rotor are hinged, and this solves two difficult problems. The first is that in case of rigid blades there would be gyroscopic action so great that control would be impossible. Simply speaking this gyroscopic action might be likened to the force that keeps a top upright while spinning about an axis.

The second problem overcome is the "inequality of lift" occuring in forward flight from the difference in air speed on the advancing and retreating blades. The advancing blade strikes a faster flow of air and since it is hinged, it rises as it moves forward. Thus its lift is prevented from becoming greater than that of the retreating blade.

The photograph of the autogiro passing over the cables of the new Hudson river bridge is symbolic because both represent feats of suspension. The autogiro must be regarded as an airplane "suspended" in the air from its rotor, getting its forward motion from its propeller, just like any plane, but getting its lift largely from its revolving rotors.

Autogiros For the Navy

ON JUNE 25th a contract was awarded by the Navy Department to Pitcairn Aircraft, Inc., for two autogiro planes at a total cost of $44,076. This is the second order for autogiros placed by the Navy, the first having been for one plane, delivery of which was made to the Naval Air Station, Anacostia, for tests on May 28. The Department has purchased these planes in order to test their possibilities for naval observation purposes.

Lindbergh Uses Caution

COL. CHARLES A. LINDBERGH often has said that he owes his success in aviation to the fact that he never takes a needless chance. This was demonstrated in his preparations for his flight to Japan when Lindbergh had a helper paint special black and white markings on the plane's red tail. The alternating tail stripes, spreading fan-like from the rear cockpit in all lines of direction, were to help Lindbergh get directions if the ship was caught in a wind drift.

Navy Tests Martin Trimotor

THE Navy has just completed testing, at the Naval Air Station, Anacostia, its largest airplane of recent years. This is a Martin Trimotor patrol boat designated as XP2M-1. It has been about 12 years since the Navy had a plane of greater size, the Navy NC type, which made the first transatlantic crossing in 1919.

The Martin boat is not only a patrol plane designed for long cruises over the ocean, but as well can carry a load of bombs, each of 1,000 pounds, which was unheard of a few years back. It is arranged, not as the usual airplane which spends its night within the hangar, to spend its time on the water. In each of its three large compartments there are several full sized Navy bunks, fresh water, and cooking facilities are adequately provided for.

The big flying boat has been developed to the point where it is self-sustaining; that is, the crew can live on board week after week, and the plane requires no outside attention other than the provision of fuel for the engine and food for the crew.

Those who have seen and wondered at the size of the large passenger transports in daily service in this country will perhaps be surprised to find that this new Navy plane carries into the air a weight equal to two of those airplanes. A ton of additional weight makes but little difference in the take-off and flying characteristics of this Navy plane.

A Long Alpine Glide

THE photograph shows the snow covered glider which Guenther Groenhoff piloted over the Alps. The take-off was from the Jungfrau mountains, and after gliding over many miles of winding flight the glider finally landed near Berne, Switzerland. While this is a notable flight, yet we can hardly be reconciled to the claimed statement that it is the first glider flight over the Alps.

Somewhere in the back of our memory we have heard of at least two other trans-Alpine glider flights, although we cannot put our finger on the names nor dates. However, if we cannot produce the evidence, we will be forced to acknowledge Herr Groenhoff's claim to priority.

XUM

I Break a Record

and Have a Swell Time Besides

Some random notes on a two-way trip across the continent.

by EDDIE SCHNEIDER

As told to Mary Bell Dann

FROM the beginning I had wanted to do something with my flying. Just being able to go up in the air and come down at the same spot wasn't very exciting. Airplanes are for going places quickly, safely and comfortably.

I don't know why, but my longing had always been to go to the West Coast. First because I had never been there, and then for various reasons you fly over all sorts of country on the way, and it is the best way to see the country. Then that is the longest distance you can go without hitting foreign country.

Frank Goldsborough had made the old junior transcontinental record. Frank was killed in a very unfortunate and peculiar accident. When he returned from his cross-country flight he was touring around, got into bad weather and landed in a low tree. His companion got out all right and so did Frank when a very strange thing happened. His reserve tank, which he carried under the ship fell and struck him in the head.

Eddie Schneider entering the cabin of his Cessna plane with which he broke the junior transcontinental record.

It was the sort of thing that wouldn't happen once in a million times, but the average person never stopped to think that out. The idea got around that it wasn't safe for young fellows and girls to fly.

Frank had believed in aviation for boys and girls of high school and college age as the greatest of sports. I wanted to prove he was right and be able to give people something to talk about in connection with junior aviation besides Frank's tough luck.

These ideas were all in the back of my head, but I hadn't been able to do anything about them. Then one day I went over to the Westfield Airport where Charlie Dann was and got to talking it over with him—how I wished I had money to buy a ship. He was already sold on the idea of young fellows being in the air and had more young fellows at his school than at any other school in the country, I guess.

We got thinking it over and he suggested that I get some of my friends to form a corporation to buy a half interest in a Cessna he had at his field. It was a cabin ship and the average passenger prefers to ride in an open ship for a short hop and it was too advanced for student training. It was cheap, the total purchase price would be less than half of the real value of the ship and it was in good shape.

I knew it was a fast ship because I had followed in the papers when it raced and brought back cups from the different air meets it went in. Then Dad came across and backed me to the half interest in the ship. I could buy the other half later when I got back with any prize money or advertising checks I received. It was a lucky break.

Things began to happen with lightning-like rapidity. I took title around the tenth of August and was off the fourteenth. The reason for this was that the National Air Races were on during the last week in August in Chicago and I wanted to be there. I had two hours time in the ship before I headed west. There were many details to attend to; the engine had to be checked, there wasn't time for an overhaul and the boys at the field worked cheerfully until all hours of the night helping me.

We didn't do any special streamlining to add to the top speed of the ship although I bet we could add an easy ten miles an hour by putting pants over the wheels and a cowling over the motor. It was just an ordinary commercial ship and I was glad I could help tell more folks that Papa Cessna builds an honest ship with remarkably clean lines and speed without the doo-dads.

We didn't install any special instruments either. We had the ones checked that were in there. The instrument company's man swung the compass for accuracy before we put the extra cans of gasoline aboard. First I bought a map of the whole United States and laid out on it what seemed to be the best course. I had it beside me at Valley Stream one day just before starting and Frank Hawks looked at it. "Hey, you, where did you get my map?" He was getting ready for his coast to coast flight. Strange thing, we had each laid out a practically identical route.

The next stop was to buy state maps, sort them out in the proper order and lay out my course on those. Charlie Dann said that wasn't enough, he must have had a hunch about what was going to happen to my compass, so that last night, after we all left the hangar at midnight after throwing in tools, a spare wheel and a bottle of coffee so that I could get right off as soon as dawn broke the next morning, I went to bed and sat up with the maps.

In the morning he handed me a log of points measured off on the map with a table of how long it would take to get from point to point. In this way I could always know where I was without a compass, by the rivers, mountains, cities and other prominent landmarks.

I wasn't waiting for perfect weather because there wouldn't be much aviation if it were all fair day and tail wind flying. All I asked was a little ceiling near Bellefonte where the mountains are apt to be a little too chummy with the clouds. The report indicated a rising ceiling over Bellefonte, which later turned out to be a lot of bologna.

IT WASN'T quite light yet when I got out to the field that morning, but the reporters and men who oper-

ated the sound trucks were already there, as most of them had slept at the field or in Rahway, the nearest town.

They took pictures and asked me to speak. I couldn't think of anything to say, I was much more anxious to be up and off. People kept thrusting letters and charms on me until my pockets were bulging with junk. Imagine how silly it would seem if you were starting off on an automobile trip and fond friends and relatives insisted that unless you took all of this along the trip was bound to be a failure.

A fellow at Roosevelt handed me a little teddy bear, my aunt gave a crucifix, my sister put the first ring my mother ever wore into my keeping, Smitty told me to take along a supposed to be lucky Cuban half dollar and his pocket watch and the Danns thought their tiny green stone monkey might help.

The ship had been warming up and Sarge, the head mechanic, was at last satisfied with it. So I started off down the runway. I felt one wheel bind slightly, there must have been some grit in there as he had the wheels off greasing them the night before, so I changed over abruptly to the runway that meets the one I started on at an angle. There was some crosswind then that took the weight of the ship off that wheel until she got into the air.

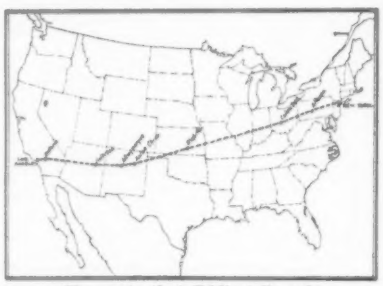
We named the ship the Kangaroo, because we hoped I could get to California in a couple of jumps. I left the field at five fifty-five and the weather grew increasingly soupy. It was still early in the morning when I found a hole in the thick stuff and began to look for a resting place. With a compass that didn't work and being unable to distinguish a railroad from a river from the air I had a perfectly swell chance of losing myself, which would add up my flying hours. I saw a nice even wheatfield and landed there.

The farmer didn't appear to resent my intrusion but started to talk. "I seen you circling around and the woman and kids run in the house scared, but I watched you." Big, brave farmer! "I allus did want to see one of these here airyplanes light. I been wanting tuh go down to Altoony and take the family, but is a long drive, nigh onto thirty mile and we ain't been yet, but I reckon we don't have to go now."

They gave me lunch and were very friendly. The weather started to clear and I was eager to be off so I had the farmer sign a paper telling what time I landed and what time I took off. This would seem to be as apropriate time as another for me to wish aloud for an airport in every town.

I had expected to be in Columbus in four hours and a half after leaving Westfield. No reports came through over the press wires about my arriving there and people got kind of worried. I had sent a telegram to Charlie Dann telling him why I wasn't going through, but he had been up all night working on my navigation and had gone home to bed when I left the field. They didn't want to call him because he was so tired and the contents of the message weren't known.

He didnt come to until five in the afternoon and then I was six and a half hours overdue at Columbus. I am sorry it gave anyone any concern, because I was enjoying myself. I got kind of stiff in the front cockpit, but it was a thrill to be in the act of doing what I had always wanted to do most. A combination of fog and darkness made further travel impossible for that night, as I was off the regular mail route which has the beacons, as I was making as near a beeline as I could. Before I took off the



The route that Eddie followed.

next morning from Altoona an Army pilot came back for the third time after traveling in circles.

The flat lands of the central states were fine to fly over and until I came to El Dorado, twenty miles east of Wichita, every little thing was just humming along. I was running out of gas or I could have flown over a sand storm that came along.

It began with a strong wind, then there was a blast of fine sand, more wind and then a thunderstorm. It was the first time I had seen ball lightning bouncing along telegraph wires, as though the flaming spheres were basketballs. There was a flying field there, but you would never know it was one. I was the only one on the field, it came too quickly for me to stake the plane down and the only way to keep the plane from blowing away was to sit on the tail, which didn't improve my personal appearance any, as I came into the Wichita airport covered with red mud.

At first they just stared at me then Pop Cessna gave me an old-fashioned bawling out for coming in after dark and guessing where the field lay. I had a general idea of the direction and distance, having flown out once before to take delivery on a Stearman.

THEY were at work early the next morning, removing the wing so they could install a big tank for extra gas. This stunt of carrying five-gallon cans was not hot as the weight shifted and the heat of the cabin sent the corks popping with expanding vapors. Then if I hit a bump a jet of gas went shooting up. I didn't like the fumes or fighting with the stoppers and was glad to see the tank go in, although it is hard to forgive them for putting the tank in on top of my spare wheel, which I could't get at when I needed it without taking the whole wing off.

The tank was much too big to go through any of the doors or windows so they lowered it through the roof. While they were fixing it, Clyde Cessna let me fly his new little powered glider. Clyde had just soloed for the first time with ordinary controls. In the early days each man taught himself to fly in a machine of his own design. In his machine the controls were reversed and until then he had always had the controls reversed on his own personal ship.

The powered glider was fun to fly, so I looped it and rolled it. When I got down Clyde's hair was standing right up straight. They forgot to tell me that no Approved Type Certificate had been issued for it yet and no one knew what it would or would not do, being still in the experimental stages.

I left slightly after noon and altered my course to the southward. As soon as I entered New Mexico, I had to dodge one thunderstorm after the other which wasted the gas and added to my flying time. I landed on a high mesa with no vegetation on it except low bushes and rolling tumbleweed. From out of everywhere and nowhere came hordes of Indians.

They must have lived nearby on a reservation and I never saw one of them who had any thought of working. All they have to do is ride around in old broken down Ford cars, about ten to a car, draped on the fenders, the hood and the folded top. When they wanted to start the cars, it never occurred to them to start them with the starter or to use the crank that swung out front. Everyone would pile onto the car that they wanted to start and shove. Their clothes were cut like ours, but made of the dizziest colors you can imagine, mostly reds and yellows.

Only one of them spoke any English and he not much. He managed to convey to me that it was the first airplane they had ever seen. When they went by in the air they had always thought they were big birds. Soon they discovered the ailerons, the movable control surfaces on the wing tips, and were convinced that the plane flapped them to fly. Then one of the men bumped into the rudder and shouted to the rest of them, "QWERTYUIOP: LKJHGFDSA" so the whole gang had to come over to wiggle it. My English-speaking friend remarked deep in thought, "Bird no have him."

The flippers were the next discovery of moment. If anyone thinks of Indians as big quiet, impassive individuals he should have heard the babble that crowd made when they were exploring the flippers. Again I heard, "Bird no have him." "What make him

(*Continued on page* 45)

XUM

New Pilot License Proposed

A "CERTIFICATE of competency" for air line pilots, a higher rating than the present transport license, has been proposed. All pilots engaged in interstate air transport passenger service would be required to hold certificates of this type.

Among the qualifications suggested by the Department of Commerce for the proposed certificate of competency is the requirement that the pilot must have at least 1,500 hours of flying to his credit, including 50 hours of night flying and 300 hours of cross-country work performed within the past three years. He must be at least 24 years old, and must have had experience in flying blind, as well as a rating in the types of aircraft to be flown in scheduled service. A written examination on airplane and engine maintenance, advanced meteorology, advanced navigation, radio communication, instruments and airline regulations is also required.

Latest Designs in Rockets

HERE is real news for model builders afflicted with rocketitis. The latest sensation in rocket propulsion comes from Canabruck, Germany, in which it is disclosed that Reinhold Tiling has devised and tested a retractable wing type flier of novel design.

This rocket model is placed in the starting position with its wings folded back close to the fuselage so that the resistance is reduced to a minimum during its upward flight. The fuse is lit, it ascends with wings closed until it reaches the top of its climb, and then the wings are automatically released. From this time on the model glides down along a normal gliding path just like any other glider.

This idea, in general, opens up a

Here we see several of the new rockets with folding wings.

field for thought. This folded wing scheme might be applied to other classes of propulsion as well as to rocket driven models. The wings could be folded back during the time that the motive power is most vigorous, and could then come slowly out of retreat when the speed diminishes.

Catalina Island Claims to Have World's Smallest Airport

ONE of the most picturesque as well as up-to-date airports in the world has been created on Catalina Island, twenty-five miles off the coast of Southern California. Situated in a small cove, the airport is probably the smallest in the country, yet during its first three weeks of operation it transported more than 3,000 passengers to and from the mainland.

Protected from either side by pro-

Above, a Loening amphibian on the turntable. Below, a Douglas climbing up onto the tiny inland airport. The clubhouse and hangars are at the left.

jecting promotories, the cove offered an ideal landing site except in point of area. This latter problem was solved through the installation of a turntable similar in type to those used in locomotive engine roundhouses. A concrete ramp, 40 by 85 feet, was built out into the sea a distance of 120 feet.

The amphibian planes of the Wilmington-Catalina Air Line Ltd. as they arrive from the mainland alight on the water, lower their wheels, roll up the ramp and move on the turntable. They are then swung around until they nose out to sea before passengers disembark. The entire process takes place within a radius of 35 feet and a distance of less than fifty feet from the water.

A walk for passengers leads directly into the gardens of the terminal building where there are comfortable settees. Colorful umbrellas spread over tile backgammon and bridge tables giving the atmosphere of a charming watering resort combined with the most modern of air service facilities. On the main floor of the terminal building are luxurious waiting rooms, tea rooms, lounges and cloisters that lead out into sequestered patios with sparkling fountains. The upper floor of the building is given over to chart rooms. A runway from the turntable leads to the four-plane hanger and another runway to a service station tunnelled into a cliff, a hundred feet or so distant.

Palatial yachts anchor off-shore from the airport. Passengers on alighting "yoo hoo" out to their host on board who sends out a shore-boat for the guests that have come in by plane. Motor cars take other passengers over a scenic mountain road to the fashionable hotel that nestles in an adjoining cove or to the island city of Avalon.

The Catalina airport combines the unique features of an airline terminal and a watering resort. The Orilla Jardin, as the airport gardens are called, are the rendezvous of fashionable society at afternoon bridge and tea. If some one suggests an additional guest, a telephone call is put in for the mainland and within the half hour the guest steps into the airport garden to join her friends.

Actual flying time from the mainland to Catalina Island is 9 minutes and with landing time occupies approximately 15 minutes.

War Flyers Excel

WORLD War fliers have not lost any of their skill in the interval since the conflict, it was developed at a recent demonstration at Roosevelt Field, Long Island.

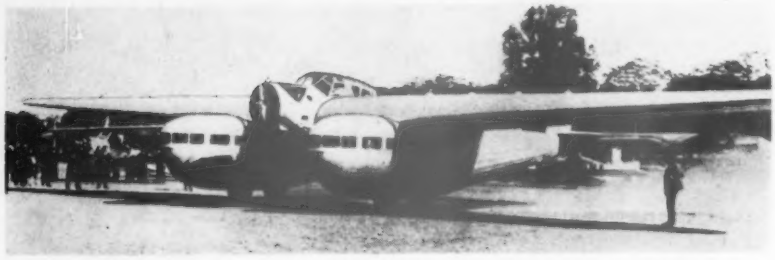
The veterans showed a group of regular army fliers something of the fine art of flying when they lifted 150 ships from the ground in 14 minutes, the army men requiring 19 minutes to take off in 90 planes. The veterans were members of the 22nd Observation wing of the New York State National Guard, and all saw actual service above the battlefields in France.

Fast Plane Planned

VINCENT J. BURNELLI, airplane designer, has completed wind tunnel test on a new commercial air transport for ten passengers and 1,000 pounds of mail, which will cruise at 170 miles an hour and have a top speed well over 200.

The new plane will conform to his usual design by having a wide cabin in the general outside contour of a wing section. It will be powered with two military type Curtiss Conqueror motors of 700 horsepower each and will be equipped with new-type retractable landing wheels and tail wheel.

Bleriot Builds Twin Bodied Transport



Here is the new transport as it appeared just before a recent test flight.

ONE of the most unusual transport ships of present day design is the new Bleriot type B-125. In many ways it would seem as though Bleriot had decided to step in where Caproni left off for so far as we know this is Bleriot's first attempt at a ship with a double fuselage or cabin system. Elsewhere, however, it is typically a Bleriot production with his characteristic touch everywhere. The ship in flying attitude is well illustrated by the front cover design in this issue.

Tandem engines are employed, two Hispano-Suiza 500 H.P. water cooled engines being standard. Between the two power-plants is located the pilots cabin while the passengers cabins are at the nose of each of the double fuselage. Each fuselage nose carries six seats, arranged very comfortably and with a wide range of vision. This ship was one of the leading features of the Vincennes airplane show recently held in France.

It is interesting to note that Bleriot was one of the first constructors to design and build a cabin type ship. This was the old Bleriot "Sky Limousine" exhibited before the war at the Paris aeronautic exhibition. It is only necessary to compare the early limousine with the latest B-125 to witness the great advance that has been made.

Some of the unusual features of the Bleriot design are well shown by this scale model with which wind tunnel tests were made. Note the four rudders, the twin fuselages with the four landing wheels, the tandem motors and the pilot's cockpit above the wing.

The Test Pilot's Job is Losing Some of Its Thrills

MODERN methods of airplane manufacture have eliminated the element of hazard from test flying, according to W. A. Mara, vice-president of the Stinson Aircraft Corporation.

"Since January 1, 1929, we have kept an accurate record of all test flights made from our flying field here," Mara said, "and over a period of thirty months a total of 2,392 flights were made. In all these flights only three minor mishaps occurred, not one of sufficient seriousness to endanger the pilot or result in even minor injury.

"It is true that many of the early test pilots actually earned their 'dare-devil' title. They went into the air for the first time in planes built in crude workshops by engineers who had yet to learn the practical lessons which make possible the tremendous safety factors incorporated in modern airplanes.

"Their motors were experimental and unreliable, to say the least, and there was no way to determine in advance just what performance might be expected of the plane and motor."

The test pilot today is merely a routine flier. Each airplane is carefully engineered before actual work of construction is begun. A stress analysis must be forwarded to the Aeronautics branch of the Department of Commerce, where government engineers recheck all safety factors before giving permission for the construction work to begin.

During the course of construction each plane is given sand-load tests to make sure that the plane has the actual strength provided in the plans. These tests impose load stress on various parts of the ship which are greatly in excess of the actual loads the plane will be required to carry when completed.

How I Became a Flyer

by KELLEY McLEAN

IT WAS during the war that my eyes first turned toward aviation. Lying in a shell hole in mud almost knee deep, cold and half frozen, I could see the planes of the morning patrol high in the air, free of the mud, and free to move as they chose. Day after day of watching them brought to me a desire to fly which could not be gratified until the close of the war.

Upon my return to America after the close of the war, I fould that my old place in the business world was taken and that there was no place for me. After two weeks of futile job hunting, I teamed up with an old acquaintance who was the proud possessor of two airplanes. One of these was the reliable OX-5 "Jenny," and the other was a Hisso powered Standard.

We were to barnstorm through the South during the winter, being advertised as "Mitchell's Flying Circus." There was to be another pilot with us and my job was to thrill the crowds with my "Death Defying and Breath Taking Feats on an Airplane," as the advertising read. I was to share in the profits and was also to learn to pilot one of the planes as the opportunity presented itself.

Now I had never done any gymnastics or acrobatics on the ground, much less in the air, but as I had been quite an athlete at school, I felt that I could put on quite a show without too great a strain on my muscles and nerves. One of my first stunts was to hang to a trapeze fastened to the landing gear of the plane. This I found not too hard to do, but the getting back in the plane after hanging on the trapeze for a couple of minutes was well nigh impossible, because of my fatigued condition. Gradually this became easier, although on one instance I almost lost my hold and came very near to falling. After this I always tied knots in the ropes which held the trapeze bar to facilitate my climbing back. Also I learned to hang by my knees and toes. This last is not so difficult as is imagined, but is not advisable for a beginner.

Wing walking made up much of my exhibition, and I found this not a bit difficult as there was such a multiplicity of drag and flying wires that it was almost impossible for me to fall off, however walking on the top wing was something else again, and I found this hard to do, due to the wind pressure, and the fact that there was nothing to hold to. Rubber soled shoes helped me retain a firm foothold on this precarious perch.

I continued this work for two years, learning during this time to pilot an airplane with fair aptitude, and now at the old age of thirty-four years, I have settled down to the steady piloting of an air mail run, and I find that I am eating with more regularity than in the days when I was walking wings.

XUM

Glider Notes for the Novice

Some practical suggestions for the guidance of glider pilots.

by
MARTIN SCHEMPP
and
JACK HERRICK

The primary training glider is the most satisfactory for preliminary training. Here is a German built PTG in flight.

THERE is no better way of learning to fly than by beginning on a glider. It is cheap and practical.

When the student becomes advanced enough in his knowledge and skill, so that he can make soaring flights, then the thrills and delight of almost natural flying is his.

During the National Soaring Contest at Elmira, N. Y., it was not uncommon to see famous aviators literally chafing at the bit until they could take off in their gliders and cruise around above the favorable ridges. Cross-continent champions, old timers, novices and men with over a thousand flying hours had the time of their life soaring quietly above the people, flying in military formations, transfering food from one glider to another, and traveling cross-country.

Those men and anyone else who has the interests of aviation in their heart can be depended on to boost gliding. They furnish the support, others must supply the technical and theoretical details.

We have gathered here some training hints that have been the result of experience in both German and American gliding schools. German instructors have used the following shock cord methods for many years, but they are comparatively new in this country. On the other hand, our material on auto-towing is all-American and due to the efforts of the Franklin brothers and Hawley Bowlus.

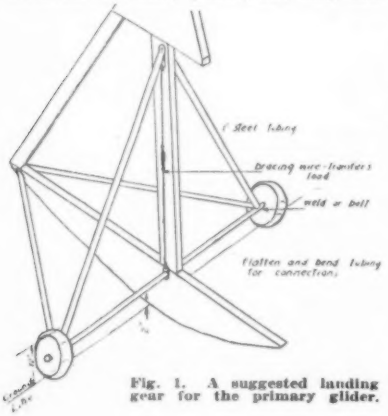


Fig. 1. A suggested landing gear for the primary glider.

THERE are two recognized systems of preliminary training. They are known as shock cord and auto-towing. Each has its advantageous features and it would be useless to try to prove one superior to the other.

It would be best to let each glider organization choose the beginning system that would best fit their conditions and terrain. However, both systems should be employed some time during the training period, so as to give the pilot experience in the various forms of glider flight. Each individual organization will vary somewhat upon the choice of its training glider. The important thing to remember is to buy only government approved equipment.

The Zogling or skid type of primary training (PTG) is not adapted for towing flights. The runner on the PTG will nearly always be wiped off in a yaw or side landing with a car towing it. In addition, the aileron control on the PTG is not as efficient as it should be when the plane is climbing steeply or kiting. Therefore, the glider pilot is always in danger of sliding off on one wing, smashing up on the ground and getting hurt.

The National Glider Association frowns on auto-towed flights in a PTG. To dodge these bad features and still use the plane in early training, a clever arrangement has been used with very good success by Mr. A. Hastings, new American glider champion, while teaching in his west coast school. The sketch is self-explanatory. (Fig. 1.)

A PTG so equipped will endure the strains of side landings, will not tip sideways while on the ground and is much smoother under motion. Then, if the instructor rigidly forbids and prevents anyone from climbing above 20 feet, there will be no mishaps.

For the first plane choose a primary training or a secondary glider, and not a training soarer. You will have a stable, slow flying ship of a very strong construction, simple to assemble and dissemble, easy and inexpensive to repair.

A soarer type is built too sensitive for training purposes and of a too delicate construction to stand rough handling in training. A good PTG ought to have about the following specifications: Span, 30-35 feet; chord, 5 feet; length, 18 feet; wing area, 170 square feet; weight, 150 to 180 pounds; gliding ratio, 10 to 1.

It does not pay to look too much for lightness in a PTG. Very often this lightness is gained by sacrificing structural strength. An experienced manufacturer is able to make a PTG extremely strong with a weight up to 180 lbs. and still have a gliding ratio of at least 10 to 1. A beautifully painted glider is not said to have the best flying qualities, but a very smooth wing surface makes a noticeable difference.

Fig. 2. A good way to judge the line-up of the wing, fuselage and tail group.

WHICH is preferable: a wooden or a steel tube construction? Both types have their advantages and disadvantages. A wooden fuselage is usually better streamlined, the simple construction makes repair work easy and inexpensive. Nearly everybody knows how to use a saw and gluepot, while proper steel tube welding takes an experienced man and makes welding equipment necessary. A steel frame glider may be bent out of shape in a hard landing. The inexperienced students do not discover the damage and make a second start which might have more harmful effects. However, the

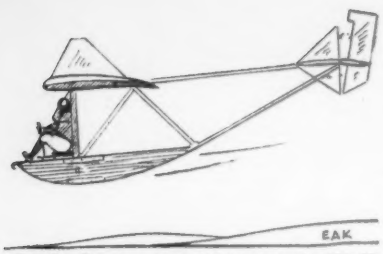


Fig. 3. Be sure that all hinge bolts are secured with safety pins.

steel construction adapts itself better to mass production and therefore is cheaper. A steel tube fuselage is very strong and resistant, and will merely bend in rough landings, when wood may break and splinter. The weight of both types is about the same.

It is easy to construct a trailer for your glider and couple it to your car. The two wings are strapped on each side and the fuselage with the tail group is put upright in between. It is handy to build right on this frame a tool box to carry all the tools for assembling the glider. Be careful to make a good strong steel fitting to connect the trailer with your car.

It was quite forcibly illustrated at the Elmira soaring meet that the secondary or closed cockpit gliders could soar under favorable conditions. In some instances, in narrow upwind channels, they held a decided advantage over the high-class soaring planes, and were able to climb above them. Later on we will explain how the open primary can be converted into a subsecondary at a small expense.

No matter what system of training is to be used, all the students should be given first a lecture or demonstration of the functions of the control surfaces. As complete a ground course as possible should be given before a single flight is made.

Be sure that everyone understands that a glider will stall if climbed too steeply and that forward speed is the first requisite for safety. All the pupils should know how to assemble the glider accurately. Each glider will be set up somewhat differently and so carefully follow the data given out by the manufacturers.

Every glider must be checked before flying and several times during a flying day. If the ship is braced with wire,

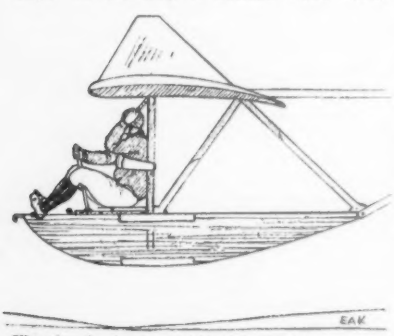


Fig. 4. A strap for the left hand is a good safety device.

we have several additional things to look out for that are not found when strut bracing is used. Tighten the flying and landing wires equally and not too much. (Fig. 2.) They should not give a musical tone if plucked. Being too tight would only cause unnecessary strain, which fatigues the material.

Preserve the slight V shape of the wings. The angle of incidence given at the root of the wings by the set of the fittings ought to be the same all the way out to the wing tips. This means the wings should not be twisted. Watch out that the center part is still standing straight up and is not pulled to one side or is even twisted. The stabilizer must be perfectly in line with the wings, also the rudder fin in line with the cabane and runner.

The tail group ought to be absolutely stiff. Connect the control cables and set them fairly tight so that although there is no play in the stick it is still

Fig. 5. The result of not using a safety belt.

easy to move. With the stick straight up in neutral position, both ailerons and the elevator must be in neutral also. The rudder-bar in neutral, the rudder must be in line with the fin.

Inspect all the control cable pulleys. See if the cable is running over them properly and if they rotate freely. Grease pulleys and hinges frequently. Do not hesitate to cut an opening in the wing fabric and put in a plywood shutter for inspecting the aileron pulleys inside the wings, if these shutters are not provided on your glider.

Are the control cables connected the correct way? Try it out by moving the stick. The stick forward, the elevator must go down. Stick to the left, aileron on the left wing, seen from the pilot's seat, must turn up and aileron on the right wing turns down.

The correct control connection is one thing to always make sure of as a habit, before every start. We know that a mixup happens very easily, even to careless motorpilots, and has caused many wrecks. Then are all the hinge bolts of the controls secured with safety pins? (Fig. 3.) Always take the time to safety wire all the turnbuckles, using strong copper wire.

Now set the elevator, by adjusting the turnbuckles, so that, when the stick is pulled all the way back and the elevator therefore as far up as possible, the stick does not touch the breast of the pilot or is pointing in a too sharp an angle towards him. A student might get pinned by the stick in a crash-up.

Another safety device is to surround the lower metal parts of the stick with a leather cover to be protected against cuts. Put two leather straps on the rudder-bar to hold your feet in place. Fasten a cushion to the seat, which helps a great deal in absorbing shocks in rough landings.

How does the safety belt look? It should be a very strong strap, at least 4 inches wide with a quick-opening buckle. The belt should not be screwed to the main upright, but go around it and be fastened high enough to surround the pilot's breast and not his stomach. (Figs. 4 and 5.)

LET'S find out the center of gravity of the glider before the first test flight. The glider is set on a wooden roller, a man of average weight (about 150 lbs.) takes the seat. Now the glider is pulled fore and aft till it balances. The roller ought to be just below a point on the wing, one-third of the wing cord back from the leading edge. (Fig. 6.)

Here is also the center of pressure of the lifting air force on the wing. If our roller and therefore the center of gravity should not be at the desired point, we can correct it by shifting the seat.

Never leave a glider tail-heavy. This means that the center of gravity is shifted towards the tail. If the seat can not be moved forward, raise the leading edge of the stabilizer, giving it an angle of incidence, thereby producing some lift and equalizing the tail heaviness. Do not raise this leading edge more than one inch or the glider will loose controlability. If the nose or tail heaviness of the glider is extremely bad the wing fittings at the fuselage will have to be shifted.

After the glider is all set up, the instructor should give a test flight before any student makes an attempt. Then we are ready for training. These facts must be impressed on the students' minds as quickly as possible. Always fasten the safety belt. Sit straight in the seat. Let your body move with the glider as it tips. Always keep your feet on the rudder-bar.

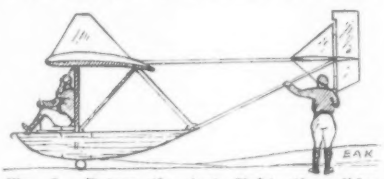


Fig. 6. Before the test flight, the glider should be balanced to find its center of gravity.

Relax and sit comfortable. Grasp the stick with the fingers and not with a death-grip. Think and don't be in a hurry. Move the control stick and rudder bar slowly and do not overcontrol. Move the stick towards the higher part of the glider. Keep the nose down and KEEP SPEED.

At this point we will have to be slightly irregular in the presentation of this training material, since there are two different systems and a possible combination of the two. We will first study the Bowlus system.

This manner of training is very successful. Over two hundred pupils have

graduated from the primary course at the Bowlus school in San Diego without the slightest accident. A beginner can learn quickly and safely by this method. The Bowlus primary is one plane that can be used for this work. Any secondary glider with a wheel can also be used with slight changes in the training routine.

Use about 40 feet of tow line. At first the student is started off across flat ground or an airport, being towed slowly (approximately 10 miles per hour) for the first few times and, of course, into the wind.

It must be clearly understood that the driver of the car is the most important factor in this form of flight. He must constantly keep in touch with the pilot, through someone standing on the running board, preferably the instructor. If the pilot gives wrong rudder and the glider is coming along sideways, the driver spurts or accelerates quickly and jerks the plane into a straight position. If the glider takes off, the driver must slow down immediately and so force the plane back to the ground.

There should be a release device on both ends of the towing cable. We must take care also that our wind velocity doesn't become great enough to lift the glider off the ground. At all times the speed of the glider against the wind must not exceed approximately 10 miles per hour. If the wind is strong, lower the car speed.

It is not advisable to do any training when the wind is over 15 miles per hour. If no indicators are available, we can guess at the wind velocity by this scale. A wind of 8 to 12 miles per hour is classed as a gentle breeze and such a wind will keep leaves and small twigs in constant motion or extend a light flag. When the wind has a speed of 13 to 18 miles per hour, it is known as a moderate breeze and will raise dust and loose paper and will move small branches.

At first the speed should be low enough so that the two wheels of the glider will stay on the ground and the front wheel is between 8 to 12 inches from the ground. If a 2 wheel or a single wheel Franklin or Cadet is being used and not the 3 wheel Bowlus, we simply instruct the student to hold the stick in neutral and it will raise the tail of the runner or fuselage clear of the ground.

Repeat the procedure until the student is skillful enough with the rudder to keep the plane absolutely in line with the car. Each time the glider is pulled back to the starting point, the pupil remains in the seat and is ready for the next attempt. A lot of time is saved in this manner.

When the instructor, who usually rides on the towing car, is satisfied with the pilot's use of the rudder, the speed is increased a little each time. Then the tail comes up and the glider is in a straight flying position. The wheels, however, are still on the

(*Continued on page* 48)

A Low Priced English Two-Seater

The Red Wing is a trim looking little ship with side by side seating. It has a satisfactory performance and is sold at a reasonable price.

VERY recently a new English light plane has been placed on the market which has many interesting features. It is a two-seater biplane called the "Redwing," and is designed with a particular view to volume production. Loaded with a three and one-half hours supply of fuel, it weighs 520 pounds.

The passengers and pilot are seated side-by-side, and two doors are fitted to the cockpit which admit the passengers without climbing over the top of the fuselage. A wide windscreen gives full protection from the weather, and the arrangement is such that a full view is had in all directions.

It is interesting to note that this little two-seater has recently passed the full acrobatic category required by the English Air Ministry at an "all-up weight" of 1,250 pounds.

High Altitude Planes Planned

BOTH the Farman company of France and the Junkers company of Germany are waging a neck-and-neck race to build a stratospheric plane capable of flying 400 to 600 miles an hour through the thin spaces of air 50,000 feet up. Details, though vague, have seeped through relative to the plane Junkers is building. Now comes news that the French are likewise rushing to completion a similar plane.

The Farman stratosphere plane is rather a small model, all-metal with a round torpedo-like fuselage, and stream-lined throughout. The fuselage is about 25 to 30 feet long with double walls to withstand the pressure from within. Ability to withstand pressure is one of the greatest difficulties of flying into the stratosphere. Construction of a hermetically sealed fuselage with oxygen tanks as in a submarine is comparatively simple. The real problem is to prevent the machine from bursting apart through the difference of the heavy pressure within and the light pressure of the rarefied atmosphere without. Professor Picard solved this problem on his balloon with an aluminum ball for his "basket," and the same principles have been applied to the new plane.

The motor will be supercharged, with turbine compression being used to maintain a normal air pressure within. A special heating system keeps the engine from freezing in a temperature of 75 degrees Centigrade below zero, which Professor Piccard found prevalent in the stratosphere. One unusual feature in the French machine is that when taking off the one in the pilot's cockpit is elevated so that he has a clear vision about and ahead of him. As the plane gains altitude and rises into the stratosphere, the pilot revolves a wheel which lets him down into the fuselage and completely seals the ship. Then the pilot flies entirely by instrument until ready to land.

Boeing Exhibits Scale Models

THE Boeing Airplane Company has placed on exhibit in the administration building of its Seattle plant an historical collection of scale models of Boeing planes, ranging from the first airplane built in 1916 by this company to its latest commercial model, the Monomail.

These models are valued at $10,000 and were built by the company's model department. They are perfect replicas of the actual size airplanes being built to one-fortieth scale. Many of these models were displayed at the 1931 National Aircraft Show in Detroit.

Sign Seen from Air or Earth

A BILLBOARD which serves a double purpose, attracting the attention of both air and land passengers, has recently been erected near the Tulsa Municipal Airport at Tulsa, Okla. The billboard is constructed so that the main portion is at an angle of forty-five degrees, thus making it visible and readable from the sky as well as from the highway which runs close by.

The Round Robin Club

A correspondence plan for POPULAR AVIATION readers

THERE has been lots of activity in POPULAR AVIATION'S Round Robin Club this month.

Before going into the matter of the new clubs which have been formed, let's just see what's going on with club No. 1, which was announced in the August issue.

One of the fellows of this group was away for a month and the letters sat on his doorstep until he got back. In the meantime Don Boggs, the guiding spirit and originator of the group, started an emergency round robin to fill the gap. So now this group has two robins in circulation.

We received one of the letters the other day and were very much interested in hearing all the news. Several of the fellows have been dcing considerable flying and two of the members had their first flight together. They both reported that it was a marvelous experience, and as a result they are completely sold on the Waco F, which gave them their first trip aloft.

All the members showed considerable interest and thought in their written discussion of all-metal versus metal-and-fabric construction.

The number of applicants for membership in Round Robin Clubs has been very gratifying and new applications are coming daily.

Several prospective members reminded us that we had neglected to assure our feminine readers that they, too, have a place in the Round Robin Clubs. But in spite of this omission, we find that our women readers like the idea anyhow and there are now three young ladies enrolled in the various clubs.

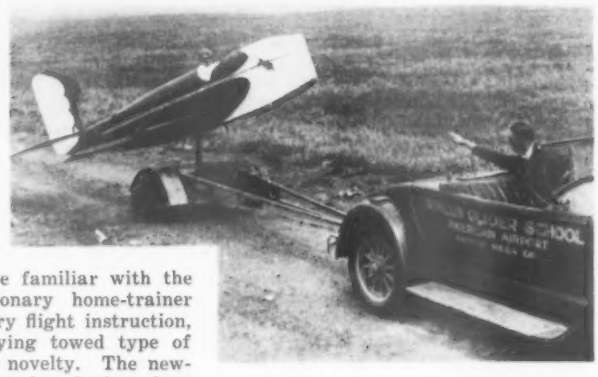
Club No. 2 includes Clifford W. Hoffer, Lakemore, Ohio; Stephen L. Ritz, Youngstown, Ohio; Philip Stone, Greycourt, N. Y.; Arnold Slaney, Hawkshaw, N. B., Canada; William Winter, Jr., Bergenfield, N. J.; J. Herbert Van Artsdalen, Southampton, Pa.; Norvell Clarkson, Macon, Mo.; Dorothy Haynes, Center Point, Tex.; William Herdman, Berkeley, Calif., and Russell Manka, Lamar, Colo.

Club No. 3 consists of Billie Mitchell, Weleetka, Okla.; Bob Pfeiffer, Elmhurst, Ill.; Houck Spencer, Columbia, Pa.; E. Clair Smith, Gap, Pa.; Joseph Loftus, North Syracuse, N. Y.; Miss Clare Thompson, North Hatley, P. Q., Canada; John Burke, Cleveland Heights, Ohio; Robert Benedict, Flint, Mich.; Dewain Palmer, Clio, Mich., and Raymond Nawrot, Grand Rapids, Mich.

In club No. 4 we have placed Gus Anderson, Chicago, Ill.; B. H. Cruce, Granbury, Tex.; Johannes C. Larsen, Dover Center, Ohio; Lyle Brown, Erie, Pa.; Andrew Czarnecki, Philadelphia, Pa.; John King, Philadelphia, Pa.; Maurice Commanday, Yonkers, N. Y.; Ambrose A. Askew, Jr., Barrytown, N. Y.; M. Ernest Cousineau, Orleans, On-

(*Continued on page* 60)

Learn to Fly With One Foot on the Ground



The glider trainer in action, towed behind an automobile. The instructor in the tow car directs the operations.

MOST of us are familiar with the pivoted stationary home-trainer used for preliminary flight instruction, but the accompanying towed type of glider is a decided novelty. The newest trainer is mounted and pivoted on a four-wheel truck so that it can be towed behind an automobile, thus gaining the additional experience of forward speed and the effects of speed upon the action of the controls.

Most preliminary trainers of the pivoted ground type are provided with motor driven propellers for supplying the necessary air blast over the control surfaces, which is all right in a way, but which eliminates the experience of stalled controls. By towing the trainer behind a car as shown, the student has experience in all four situations of flight—and that is worth while.

In the picture the instructor, Frank Dace, is giving instructions to Miss Betty Maxwell in the machine by means of a microphone.

Interior of the World's Largest Land Plane

THE greatest airline company in England, Imperial Airways, has ordered from the Handley Page Co. eight four engined biplanes, type 42, for 40 passengers each. These planes will soon be in service on the London-Paris and London-Brussels airlines.

The passenger cabins, both fore and aft, are very luxurious, and between

The Passenger Compartment of Handley-Page Transport seems more like a Pullman car.

the cabins, a bar and the radio are installed.

These planes are powered with four Bristol Jupiter radial air cooled engines of 550 H.P. each. Their weight empty is 14,000 lbs. and the useful load is 7,000 lbs. The cruising speed is 106 m.p.h.

Powerful Radio Transmitter on the Akron

THE most powerful radio set ever to be installed in an aircraft is nearing completion and will be installed on the U. S. S. AKRON. The set, built to Navy Specifications by the Westinghouse Electric Company, is a development of the set now in use in the U. S. S. LOS ANGELES.

With a maximum allowance of 1,400 pounds for the weight of the equipment, the Westinghouse Electric Company, by careful design, great attention to details and the use of light materials, brought the weight of the equipment down to 1,000 pounds.

There are three receiving sets: High Frequency, Intermediate Frequency, and Direction Finder, and in this connection there will be also two trailing antennae (reel-up type), and one fixed wire antenna.

Two independent gas engine driven generators located in the generator room are for auxiliary purposes. The engines are Universal 4-cylinder, rated 40-horsepower. One generator unit will run continuously, shifting at the end of 8 hours. Each separately, is capable of carrying the normal load. For peak conditions the two generators can be paralleled supplying a total of 22 kilowatts continuously to the ship's mains.

Floating on the line is a high capacity storage battery, the purpose of which is to supply for a certain time, if necessary, the instrument lines, telephone circuits, and battle circuits. For emergency radio power the battery would be able to supply enough power to the radio transmitters to send emergency messages.

The crew of the radio department of the U. S. S. AKRON consists of 4 men, standing watch and watch. One of the junior officers of the regular ship's complement will be assigned additional duty as radio officer.

The radio equipment in the U. S. S. AKRON is but one phase of the electrical installation. The airship is electrically equipped from stem to stern, including electric toasters, coffee urns, stoves, and fans.

XUM

Question and Answer Department

All questions of general interest on any phase of aviation will be answered authoritatively by Popular Aviation's Technical Staff.

AS we have before mentioned, this department is at the service of our readers, just so long as their questions are of general interest to other readers.

Our contributors, this month, have submitted such a deluge of questions —and good legitimate questions—that we are swamped. However, all of the questions submitted will be answered in turn, so do not despair if your question is not answered in this issue.

We have received a number of letters asking for information on patents and inventions which cannot possibly be answered by anyone outside of the Patent Office at Washington, hence we must ask to be excused from any attempt at printing inquiries of this nature. Whether or not an invention is patentable depends upon its priority, and as we have no such records, we are helpless.

We solicit questions, however, on general informative subjects relating to aircraft construction, maintenance, operation of aircraft and similar flight problems. Adress letters to Question and Answer Department, POPULAR AVIATION, 608 S. Dearborn St., Chicago, Ill.

* * *

QUESTION:—Karl R. Hammond, Quincy, Ill. *What are fairing strips and for what purpose are they used? I have noticed this expression many times in aeronautical publications, but have been unable to get a description of them.*

Answer:—FAIRING strips, or simply "fairings," are casings placed around certain structural members for reducing the head resistance, the casing being of streamline form. When round steel tubes are used as struts, for example, it is sometimes the practice to cover the steel tubes with a wood streamlined covering that will give less resistance than the steel tubing.

* * *

QUESTION:—F. Schuman, Glencoe, Ont., Canada. *We want to know how many pounds of air pressure are produced by each horsepower of an airplane engine. We would like to find out how many pounds of air pressure acts on the propeller of a 100 h. p. engine when the throttle is wide open.*

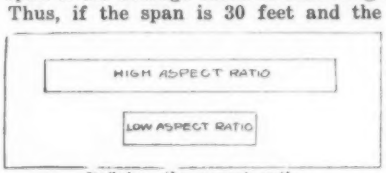
Answer:—THIS pressure depends upon so many factors that we cannot give an answer without knowing more of the details. It is affected by the speed of the propeller, its pitch speed, the form of the blades and similar factors that we do not always know. Speaking approximately, this pressure will range from 40 to 80 pounds per square foot. Again, we must know the forward speed of the airplane, which has a decided effect upon the pressure and thrust.

With the same engine, the thrust and blade pressure is greatest with a fine pitch when standing still on the ground, and decreases when the pitch increases. When the airplane moves forward in flight, then conditions change again. Very approximately, the thrust may range from 200 to 800 pounds for a standard type of propeller giving static thrust alone.

* * *

QUESTION:—John Kubica, Cicero, Ill. *The following terms have me badly mixed up. One book states it opposite to the other. Please explain the difference between high aspect ratio and low aspect ratio. Please also explain the difference between drag wires and anti-drag wires.*

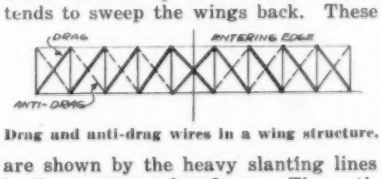
Answer:—THE aspect ratio of a wing is the ratio of the span to the average chord of that wing. Thus, if the span is 30 feet and the chord is 5 feet, then the aspect ratio is: 30/5 = 6.0. This is about the average ratio of ordinary ships.



Defining the aspect ratio.

The aspect ratio of gliders is usually very much greater, from 12 to as high as 21 in certain cases. In general, a high aspect ratio (over 6) gives a more efficient wing, but, on the other hand, this leads to excessively long spans and shallow wing sections that do not permit of sufficiently deep spars to carry large power plants.

The drag wires are the wires that resist the drag of the wing, or the force exerted by the airstream that tends to sweep the wings back. These are shown by the heavy slanting lines in the accompanying figure. The anti-drag wires are mostly effective in preventing the wings from sweeping forward when the ship stops suddenly, and also for lining up the wings.



Drag and anti-drag wires in a wing structure.

* * *

QUESTION:—Robert J. Tarte, Grand Rapids, Mich. *In the September issue of* POPULAR AVIATION *you answered the question, "When does a glider become a plane?" by saying, "A glider becomes an airplane as soon as the power plant is installed." Why, then, does not the glider become a lightplane? What is the difference between a lightplane and a powered glider in maneuverability, etc., and in any other ways? Why does not the lightplane have the marvelous soaring and gliding faculties that powered gliders have? Please clear this matter up for me as I am quite puzzled about it and am becoming more so every day.*

Answer:—THIS answer was given in respect to the attitude of the U. S. Department of Commerce in granting licenses. It is their idea that any sort of wing supported craft becomes an airplane when equipped with an engine, and is a glider when the craft is propelled exclusively by gravity.

A lightplane is an airplane—always —the difference being relative only in regard to the horsepower of the engine. Generally speaking, a lightplane is one equipped with an engine having a rated horsepower of 50 or less, while the rating of an airplane is unlimited. Both the airplane and lightplane are identical in principle, and this holds for powered gliders as well.

A powered glider is a lightplane or airplane, just as you take it. The word glider indicates a very lightly loaded airplane or lightplane, so lightly loaded in fact, that it gains support at very low velocities. A glider wing may be loaded to 3 pounds per square foot, for example, while a full size airplane wing may be loaded up to 18 or 20 pounds per square foot, depending upon the speed.

A powered glider is therefore a lightplane having exceptionally light wing loading and a low speed. On the other hand, many light planes have very good soaring and gliding properties. For example, the Hanriot biplane at one time held the world's gliding record when its engine was removed.

* * *

QUESTION:—Russell Goldknecht, Palatine, Ill. *Please explain this: What kind of meal powder do you use in the construction of a rocket? Also, how much water must be mixed with gum arabic for refills?*

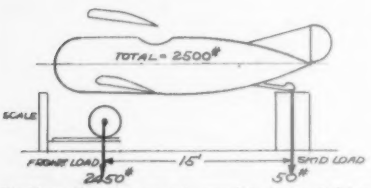
Answer:—ORDINARY sifted fine cornmeal will be sufficient to slow down the combustion of the powder. This must be mixed thoroughly with the other ingredients so that the powder will burn uniformly and will not flash up suddenly in spots. Enough gum arabic should be added to the water to give it a greasy feeling. Perhaps two ounces to a pint would be sufficient. The mucilage thus produced must not be thick, but only sticky enough to hold the powder grains together.

* * *

QUESTION:—Gordon C. Clark, Avalon, Cal. *How can you find the center*

of gravity of an airplane? Should your load be made to the center of gravity or should the load be put on and the wings made to fit this load?

Answer:—THE quickest way to determine the center of gravity of a model airplane is to support it at different points along its length on a knife edge until it balances in the required attitude. With large ships, the wheels can stand on a balance and the wheel load is then taken.



Finding the center of gravity by weighing the complete plane.

The total weight less the wheel load is the skid load, and from these weights the center of gravity can be calculated. Thus, in the attached sketch the skid load of 50 pounds is multiplied by the distance of 15 feet, which gives a product of 750. This divided by the total weight of 2,500 pounds gives the distance in feet measured from the center of the wheels.

* * *

QUESTION:—Harry Bentenmiller, Stratford, Canada. *Now for a few questions.* (1) *What effect has sweepback on an airplane?* (2) *Taking everything into consideration, is metal construction better than wood, fabric and metal combinations?* (3) *What is the best way to get into the industry as a draftsman?*

Answer:—SWEEPBACK gives greater fore-and-aft stability, and if sufficient sweepback is employed, no horizontal elevator nor stabilizer is necessary, as will be noted on tailless planes. The backward part of the wind surface acts as a tail surface. Usually, sweepback is an advantage in still air, but causes directional instability in a wind, tending to make the ship fly into the wind.

(2) Both wood and metal have their advantages. Wood is lighter and repairs are simpler than with metal frames. This is particularly the case with wing structures. On the other hand, metal construction does not warp in damp weather, and requires no complicated fittings or frequent aligning. Neither construction is fireproof, so it is about fifty-fifty on that score.

(3) The best way to get a position as aeronautical draftsman is to take a course in some school specializing in such work, and then to "butt into" the industry after you have this training. This is pleasant, interesting work and should lead to better things in the future.

* * *

QUESTION:—F. G. Schwalm, Freeport, Ill. *Is the resistance of biplanes much greater than that of monoplanes, or is the loss by friction largely imaginary? Do you believe that a monoplane trainer will show much better fuel economy than a biplane or is it the other way about?*

Answer:—FOR trainers operating below and up to 100 miles per hour, the additional resistance offered by the interplane bracing amounts to very little. Even at high speeds, the interplane bracing of the biplane is not excessive, and you have probably noted that the U. S. Army and Navy both use biplanes for high speed work. There is some loss due to the interference between wings, but this is not of as great importance as the monoplane fans would like to have us believe.

* * *

QUESTION:—J. W. Kelley, Springfield, O. *Can you give me the firing order of a typical nine cylinder radial or rotary cylinder engine?*

Answer:—MOST engines are arranged so that one cylinder is skipped. This will give a firing order of: 1-3-5-7-9-2-4-6-8. From this, you will see, all nine cylinders will fire in two revolutions. All of the odd cylinders fire during the first revolution, while the even numbered cylinders fire during the second revolution.

* * *

QUESTION:—R. T. McMahon, Galena, Ill. *Is there much difference between an open ship and a cabin ship in the matter of flying? Is it more difficult to fly a cabin job or is it easier?*

Answer:—THERE is some difference in the feel of the two ships, for the pilot of an open ship will miss the air-stream by which he is guided in many maneuvers. In the cabin, of course, we must look about for other ways of telling whether the ship is skidding or sideslipping. The feeling of the seat at different angles is the principal guide to flying a cabin plane, although both ships have instruments for this purpose.

* * *

QUESTION:—*How do speed reduction gears affect the performance of an engine? I should think that the losses due to gear friction and weight would reduce the output rather than to increase it.*

Answer:—THERE is a friction loss, as you say, but this is more than offset by the increased power made possible by running the engine at a higher speed. The propeller does best at a speed of about 1,200 to 1,500 rpm., while the engine must run much faster than this to develop its maximum horsepower. Gearing of the proper ratio permits both the engine and propeller to run at their optimum speeds, and with correctly cut gears the loss is comparatively small.

* * *

QUESTION:—J. J. Smith, Kansas City, Mo. *Would benzol be a better fuel for aviation engines than gasoline? Please explain why it is better or worse than gasoline.*

Answer:—BENZOL contains very much less heat per pound than gasoline, and everything else being equal, benzol would be too heavy. However, benzol will withstand higher compression pressures than gasoline without detonating, and by using very high compressions at higher efficiency, this would partially offset the lower heat content.

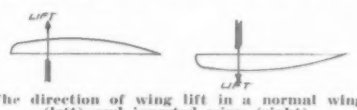
Benzol also has the admirable quality of burning without much carbon deposit. The benzol is most advantageously utilized when mixed with gasoline, thus making higher compressions possible than with the straight gasoline alone, and conferring upon the gasoline the merits of burning with very little carbon. Benzol is a varnish remover and cuts the gums and resins deposited in gasoline soot.

* * *

QUESTION:—D. E. Nash, LaFeria, Tex. *I would like to know why the wings of an airplane are not turned over? Now, this may sound like a foolish question, but it is a fact that if a wing is towed in water with the convex or rounded side down it will be more like the bottom of a racing boat and will be supported. It stands to reason that if the round side of the wing is down it will have a tendency toward skimming over the air, and yet the shape of the front of the wing will still afford a larger, or at least as large, an air pocket.*

I claim that if you turn the wing over you will have a greater lift. If the present way is right, and I am wrong, will you or some fan please explain to me that my theory is wrong?

Answer:—FLYING through a continuous uniform body of air is entirely different from skimming over the surface of water. As you say, the convex side down will give better support when skimming over the surface of water, but this is not the case when the wing is passing through air or any other continuous fluid. Passing through the fluid and over the surface of discontinuity between two fluids is a different proposition.



The direction of wing lift in a normal wing (left) and inverted wing (right).

In air, the lift is away from the convex side, hence the convex side must be up to gain lift. If turned upside down, then the tendency would be to pull the airplane down. This is the case in practice as well as theory. This action is shown by the accompanying sketches and where a partial vacuum exists on the convex side of the wing. Exactly the same thing would take place if the wing were deeply immersed in water or any other fluid.

Clouds Are Good Wind Indicators

MEN have discovered a new use for the clouds that float in the blue—as wind gages. Aviators always like to know the speed of the wind at various levels. A cloud travels with the wind, and makes visible the speed of the wind at a certain altitude.

The Weather Bureau of the United States Department of Agriculture has devised apparatus by which observers can determine how fast a cloud is moving. They sight the clouds in a black mirror mounted in a frame graduated in degrees. By observing the movement of the image of a cloud as reflected by the mirror for a certain period of time, they get one factor for a computation.

The other factor is the height of the cloud above the earth. The observer determines the distance from the earth to the cloud by releasing a standard "ceiling" balloon, and watching it until it disappears into a cloud. These balloons are inflated to a certain pressure, and the observer knows how rapidly such a balloon rises.

By timing it from the moment of release until it enters the cloud it is easy to make a close estimate of the height of the balloon. With this as a second factor the observer computes the rate at which the cloud is moving, and can tell the pilot whether he will fly against a headwind or have the benefit of a tail wind.

Frequently it is possible to inform the pilot that he will encounter a favorable wind at about a certain altitude, but will find less favorable flying conditions at other altitudes.

Girls Flying in Florida

FORTY young ladies compose the charter membership of the Girls' Squadron of the Miami Aero Club. This group has been dubbed the "Powder Puff Squadron." The young ladies have specified their desire to take up flying in earnest, and the Miami Aero Club is assisting them.

Girls in college, just out of college, in business and the society bud make up the Powder Puff Squadron, but all are very much in earnest in their desire to master the art of flying.

Mrs. Opal Kunz, of New York, commander of the Betsy Ross corps of flying women, flew to Miami to address the Powder Puff Squadron, and to invite them to become members of the Betsy Ross corps as soon as they could qualify for membership.

World's Largest Scale Model is Demonstrated

The model of this craft is 75 feet long. It runs on rails at a high speed.

A NOVEL lighter-than-air type ship is being developed in Massillon, O., a scale model of which is shown. This ship is arch shaped, with the engines enclosed within the arch, while the passengers are quartered on either side of the bottom. Air steps in the front end of the hull are used to increase the density of the air and thus to obtain a better "grip on the air," to quote the inventors.

While the model is provided with only six electric motors for the trial and experiments, the full size ship will be equipped with twelve Packard engines. It is expected that this arrangement of the propellers will give more effective propeller drive and that other superior features will develop.

More Army Pursuit Planes

CONSTRUCTION is progressing rapidly on the recent order awarded the Boeing Airplane Company by the Army for 135 Wasp-powered P-12E pursuit planes. Deliveries on this $1,541,366 contract are scheduled to start this summer, with the first ten planes to be completed prior to August 1. The production schedule calls for completion of the entire fleet of fast Army pursuits before next summer.

The P-12E will be similar in general design to the previous Boeing P-12 fighter, except that its fuselage will be of metal monocoque construction. This is the first standard Army pursuit plane to have this type of body construction.

Airplane Production Statistics

AIRPLANES manufactured in the United States during the first six months of 1931 totaled 1,606, of which 1,069 were for civil use.

The 1,069 airplanes built for civil use in this country during this period included 750 monoplanes, 277 biplanes, 40 autogiros and 2 helicopters. Of the monoplanes, the majority were land planes of the one or two place open cockpit type, and of the biplanes, the majority were either two or three place open cockpit land planes.

In addition to the 1,069 airplanes produced for civil use, 480 were for military delivery and 57, including civil and military, for delivery to purchasers in foreign countries.

Rocket Glider is Tested

FROM all appearances, the rocketeers are hard at it, and now rockets have been attached to a glider. Dick Devine recently tried out a rocket powered glider of his own construction in California and is said to have demonstrated the success of the rocket principle as an aid to gliding.

This glider is equipped with twelve four-pound rockets and one twelve-pound rocket, which is said to give the glider a speed of 120 miles per hour. After the glider is launched in the usual manner, the rockets are touched

These twelve rockets give the glider a speed of 120 m.p.h.

off and away she goes. This is just another way of keeping your mind off of business worries.

The illustration shows how the rockets are installed under the body, and how an engine compartment is literally right under the pilot's seat. While this may have proved very interesting to the spectators, we would just as soon have someone else try it

List of U. S. Pilots Grows

THERE were 16,268 pilots, 7,458 aircraft and 9,222 mechanics holding active Department of Commerce licenses on July 1, 1931. There has been a growth in each of these classifications since the beginning of the calendar year, when there were 15,280 licensed pilots, 7,354 licensed aircraft and 8,993 licensed mechanics.

The total number of aircraft, licensed and unlicensed, of which the Branch had record on July 1, was 10,235, as compared with 9,818 on January 1, 1931. Unlicensed craft (bearing identification numbers only) numbered 2,777 on the first of July, as against 2,464 on the first of January.

Among the 16,268 persons holding pilots' licenses as of July 1, there were 6,532 of the transport grade, 1,741 limited commercial licenses, 67 industrial pilots and 7,928 licensed in the private classification. The licensed pilots included 445 women, whose licenses were divided as follows: Transport, 34; limited commercial, 53; industrial, 2; and private, 356. The 9,222 mechanics included 5 women.

The number of licensed gliders was 100, and unlicensed gliders, 1,107, making a total of 1,207. Licensed glider pilots numbered 238. The greatest number of gliders in a single state were in California, where there were 257.

Youth Takes to the Air

IT IS youth that is taking to the air. The average age of students at the Boeing School of Aeronautics is twenty-one years. Eighty-five percent are high school graduates. Forty-four per cent have had one or more years of college.

JUNIOR ACTIVITIES
Edited by Paul W. Clough

EDDIE SCHNEIDER, 19, of New Jersey, finished the Ford Tour in third place this year, flying his "Warner" Cessna.

Harry Russell, flying a Ford, finished first with a score of 63,764.3 and James Smart also flying a Ford finished second with a score of 56,645.2 and Eddie's score was 44,343.7.

Eddie would have had a much higher score but he had a forced landing in the Kentucky mountains due to engine trouble which kept him on the ground for four days. When he caught up with the Tour again in Montgomery, Alabama, he was in seventh place. He gradually worked his way up until on the last stop before Detroit he was fourth and made Detroit, coming in third.

Eddie, who won the Great Lakes Light Plane Trophy last year, probably would have won it this year again if he hadn't had that forced landing. L. R. Bayles, flying a Gee Bee Sportster, won the Trophy.

Last year Eddie set a Junior Transcontinental record in the same Cessna. (Read Eddie's own story on this record flight elsewhere in this issue.—Ed.) Eddie is having his ship overhauled. I am sure we will be hearing more from him in the near future.

* * *

Stanley Brown, 18, of Garden City, L. I., has been doing quite a bit of flying this summer as he goes away to school in the winter and doesn't get to fly while he is there. Stanley expects to get a ship next summer when he finishes school. Stanley received his Private Pilot's license last summer at Roosevelt Field.

Fred Davis, 17, of Jamaica Sea Airport, L. I., has an O. X. American Eagle that he has been flying quite a bit. He comes over to Roosevelt Field quite often.

"Young Pete" Hill in the cockpit of his plane.

Harold "Young Pete" Hill, the 18 year old Wichita pilot, recently annexed the world's speed record for junior pilots by averaging 170.8 miles per hour over a closed course. He also holds the junior altitude record—two notable achievements.

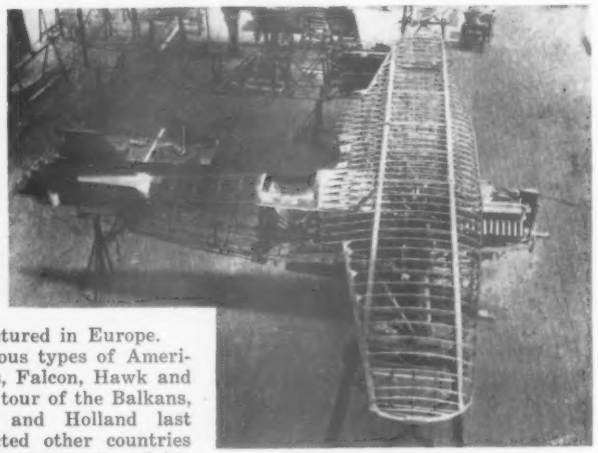
* * *

Well I hope to see all of you Junior pilots at the National Air Races this year. All of you who can't get there please write and tell me all about yourself so I can put it in this column. The more information I can get about you the more interesting this column can be made, so get out that pen and write me a few lines.

American Army Planes Are Now Built in Europe

A MANUFACTURER in Holland is building six Army Hawk Pursuit planes for the Dutch East Indies Air Force, similar to those now in general use by the United States Army Air Forces. This is the first time American fighting planes have been manufactured in Europe.

A group of various types of American fighting planes, Falcon, Hawk and Fledgling, went on tour of the Balkans, Southern Europe and Holland last year. It is expected other countries abroad may shortly use American fighting planes, judging from the reception received by the American Airplane Mission led by James H. Doolittle.



An Army Hawk under construction for service in the Dutch East Indies. This is the first American fighting plane to be built in Europe.

Midget Complicates Tariff

ODD little things happen on air transport lines, and new problems have to be solved daily. For instance, the Washington traffic office of the Eastern Air Transport System recently had an inquiry directed to it from the company's general offices to the following effect:

"Why was the passenger using ticket No. 00040 allowed to carry 53 pounds of luggage without excess charges from Washington to Richmond? Luggage is carried free up to 30 pounds, and the limit allowed is 50 pounds."

"We allowed this," the Washington office replied, "because the passenger was a midget and weighed only 48 pounds himself, thus making the total for himself and the baggage only 98 pounds. Since this was less than the average weight of a passenger alone, we did not charge him for excess weight."

A passenger whose air baggage weighed more than he did.

XUM

Practical Lessons in Flying

by JOHN B. RATHBUN

The Second Lesson in Stunting

THINGS had been sliding along smoothly for Bob, the flight student, and still smoother for Ed Keith, the instructor. Bob, always thoughtful and careful, had been making rapid progress, and as a result, there was little for Ed to do except to make a few preliminary explanations and to give a little demonstration.

Ed's mind went back to other kiwis that he had handled from time to time, stupid or else openly defiant to orders, and he dreaded the thought of the time coming when he would have to lose Bob and wrestle around with that smart-alec Smith fellow or the dense Jones boy.

They had done a little stunt flying to date. Looping and that group of maneuvers that are based upon loops or partial loops. Despite their appearance as viewed by a spectator on the ground, these stunts are comparatively easy to perform and fairly safe when performed at sufficient altitude. If the ship is even fairly well handled, looping does not introduce very severe stresses into the framework of the ship, and the tendency in a normal loop is to hold the pilot on his seat rather than to throw him out.

Of course, with an "outside loop," things are quite different, for the pilot's safety then depends entirely upon the strength and condition of his safety belt. In an outside loop, the centrifugal force is outward instead of inward as with a normal loop, the stresses in the structure are reversed and the pilot must be held in.

"I wonder if we could make some improvement on the plain loops," asked Bob as they sat waiting for their turn. "Seems to me we should be able to work out some new combination that would make the audience sit up and take notice. Just for example, we could make a succession of loops along a straight line—or something."

"Absolutely," returned Ed. "There is one new loop combination that is being peddled around the air-meets and shows this year that is pulling down the applause. This is the so-called 'vertical figure eight,' composed of a normal loop performed directly above the succeeding outside loop so that the ship traces out a vertical figure eight."

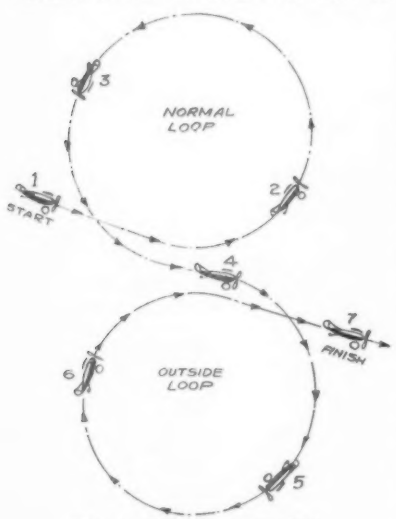


Fig. 1. Vertical figure eight.

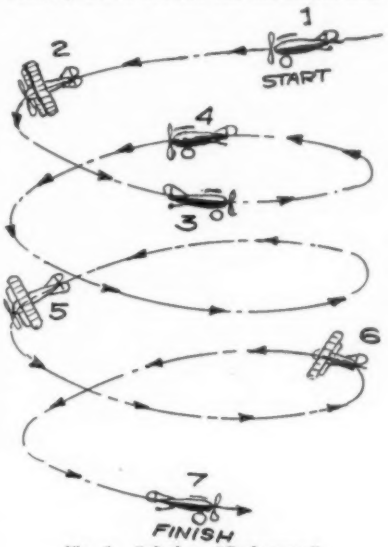


Fig. 2. Spiral or "Corkscrew."

Bob immediately became curious about this stunt and felt the urge to have Ed try it. This was something that was strictly up to date in the air circus line and so he asked Ed to demonstrate it.

"Well, perhaps we might take a try at it just for the fun of the thing," agreed Ed, "but I think I had better pull it off alone with you standing on the ground so that you can see what it is all about. If you are in the ship you won't be able to get all of the fine points of the job. It is really very simple to do, there is nothing in it that you have not already done yourself, but you are likely to get all mixed up if you haven't seen it before."

THEY walked out slowly to the waiting ship with Ed explaining the principles as they walked. The idea was to get sufficient altitude first of all because the two loops take up a lot of room and there must be an additional 1,000 feet of altitude for safety at the end of the stunt. At least 4,000 feet should be put between the ship and the ground before the vertical figure eight is started.

"Now, after we get plenty of fresh air between us and the field," explained Ed, "we will glide down and start a normal inside loop. After going out of this loop, the next move is to go into an outside loop just below it. This, while apparently simple, takes good judgment of distance and speed, else the figure eight will be twisted all out of shape. There is always a tendency toward turning the second loop way to the right or left of the top loop, and when this is done, the stunt loses most of its effectiveness."

Bob looked over the ship as per usual, and started her engine. Then a thought occurred to him that seemed to promise better things. "Say, Ed," called Bob, "why not get some of those smoke candles that the sky writers use so that I can have something to judge you by. If you leave a trace of smoke behind you, I can see whether you are as good as you think you are."

"All right, kid, check up on me any way you like," grinned Ed. "There used to be some candles in the tool room at No. 2 hangar. Just trot over and see if you can find them while the ship is warming up. And don't forget to bring some matches while you are about it."

Bob was successful in his search and he came back with four flares. He also brought some wire, and together they securely fastened the flares at the rear of the ship where there was no danger of fire and yet in a position where the slipstream would not fan out the smoke. This being done, it was up to Ed for the rest of the performance.

"Pull out those chocks and watch me closely," said Ed. "Your suggestion concerning the flares is sure going to help out, for I can watch the smoke trace and judge my position better. All right now, grab the right wing and help swing me around."

Ed took off in his characteristic style and climbed rapidly. He climbed and

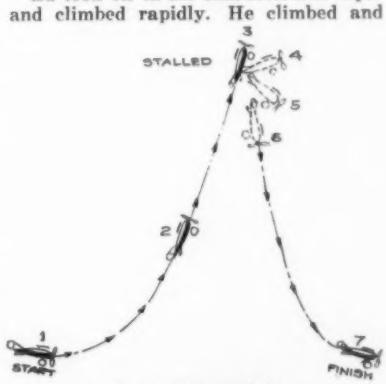


Fig. 3. Stalled flight.

climbed until he was not much more than a speck in the sky before he leveled off. Then he swung around twice and went down into the first loop. (Fig. 1.) This was a beautiful tight loop as shown clearly by the smoke trace. On coming out of the top loop, forming the upper part of the figure eight, he immediately entered into the outside loop as at (4). This was also a good loop, and when he left it, the smoke trace still remained from both loops so that the result was a white figure eight standing in the sky just as

Fig. 4. Whip-stalls.

in Fig. 1. After circling the field for a couple of times, he came down with a three-pointer and waited for Bob.

"Wonderful," said Bob. "If you had a piece of chalk and a blackboard it couldn't have been more perfect. If you will look over to the east you will still see some of the remnants of that figure eight floating along in the wind. When do I start in on the job?"

Ed nodded his head to discourage the thought. "Not just now, young 'un. I've got to carry out the regular routine with you and the routine in my instruction book hasn't anything in it about vertical figure eights. Just keep this under your hat, though, and we will do it after we finish up the standard work that the big bosses have laid out for us. What we are going to do now is mostly in the vertical line of business such as dives, spins and the like. Some of this, you have seen me do before, but now you are going to get into the game."

"Well, I don't hanker after the spins," said Bob, "but if they are on the bill of fare I suppose we might as well take them now as later on. Just give me a little hint in advance so that I can go into training."

Ed smiled at this for a certain recollection came into his mind. "I see that you haven't forgot that nice spin I gave you when we first started, and when I had to spin some of the conceited nonsense out of you before I could pound in some good common sense. Well, it's not so bad and you'll hardly notice it now, although the first spin did upset your digestion.

"All right, climb in. Our first experiment this morning will start out with a spiral just as a review, and then we will work in some more stuff from time to time that has to do with dives and stalls in general. We're off."

ED climbed her up to about 3,000 feet, swung around and then started on the spiral shown by Fig. 2. The nose is held slightly down, the rudder is swung over for the radius desired, and the ship is banked up sufficiently for this radius. The spiral then continues indefinitely with the ship tracing out the threads of a corkscrew, losing altitudes all the while.

"Stick slightly forward, right rudder, right stick," explained Ed over the phones. "The best way to keep a smooth pefect spiral is to pick out some spot or landmark below you, and then use this point as a center for your circle. If you spiral around at random, without any definite center, the spiral will be ragged. Of course, you can make the spiral as 'tight' as you wish by keeping her on a short radius and banking her up steeply, but just remember that if you bank up over 45 degrees that your rudder and elevator controls will invert so that the rudder acts as an elevator and the elevator functions as the rudder.

"Spirals are of practical use in losing altitude when about to land. They are of particular importance when the engine goes dead. For this reason it is well to practice them as often as possible. Now tighten her up a bit—give her more right rudder. That's it, now what has happened?"

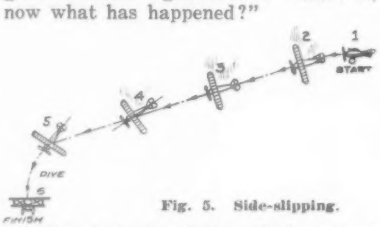


Fig. 5. Side-slipping.

Bob had shortened the spiral and had correspondingly increased the bank until he felt that something was wrong. He gave her still more rudder and the nose pointed down at a steeper angle. He pulled back on the controls to correct the dive and went into a sharp bank. Then he suddenly remembered Ed's comments about the inversion of the controls, and started to work things out along this line.

As a matter of fact, things were pretty well messed up for a while, but a little experience remedied matters and once again Bob had her swinging around the corkscrew. Once the proper position of the controls was found, it was a simple matter to keep up the good work.

"Very good—cut it," ordered Ed. "You did a lot of experimenting, but you finally got her straightened out. I doubt, however, whether you can repeat those corrections again, because you went through so many monkey motions that the thing must be all tangled up in your mind. Now I am going to tell you a few things about inverted controls and spirals.

"When you are in a tight spiral, or on any steep bank for that matter, the ship is lying partly on her side. If she is on her right side, giving her right rudder will point her nose down and left rudder will bring the nose up. Savve? In short, top rudder will raise the nose and bottom rudder will lower it. In the same position, pushing the stick forward will give a left turn, while pulling it back will cause it to turn in the right direction. Put the rudder and stick over in the proper position, and then trim the nose to the horizontal or slightly below the horizon in the case of a spiral.

"In making a spiral that is becoming too steep, just take off a little of the bank by means of the stick or pull back the stick slightly. A very steep spiral loses altitude quickly. And another thing. In turning around a short radius, the outer wing is traveling much faster than the outer tip, so that there is an increasing tendency toward raising the outer wing and increasing the steepness of the bank. This may increase to the point where it will be necessary to depress the outer ailerons. Try it."

Bob started the routine over again, and after one or two mishaps because of the inverted controls, finally mastered the spiral both on wide and tight turns. He found that the radius of the spiral had much to do with the aileron controls, just as Ed had stated, and that the movements of the stick were much more complicated than when wide sweeping turns were made.

"Next on the program will come a few stalls and 'whip stalls,'" announced Ed. "You have stalled the ship many times through accident, but now I want you to go about the job in a workmanlike manner without going into a spin or some other fool thing. According to the old time dope, this was also

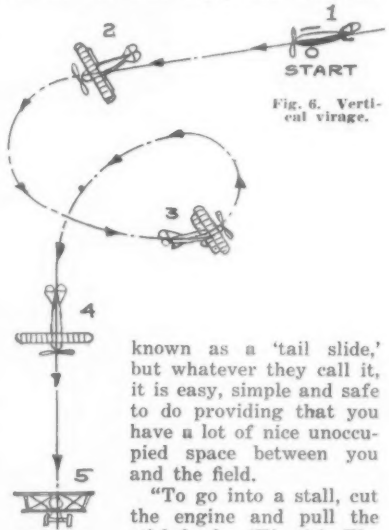


Fig. 6. Vertical virage.

known as a 'tail slide,' but whatever they call it, it is easy, simple and safe to do providing that you have a lot of nice unoccupied space between you and the field.

"To go into a stall, cut the engine and pull the stick back. (Fig. 3.) The ship will soon slow up to stalling speed at the top of the hill (3), and then will fall over with the nose down (Dotted lines 4-5-6) and go into a dive with the stick forward. In this way, the ship will gain speed through the dive and can be brought out into the horizontal (7). At first, the ship will slip down backwards on its tail for some distance before the nose goes over, but the pressure of the air against the upturned elevator will throw it over.

"If the stick is released at the top point, the dive will begin automatically,

(*Continued on page* 56)

How to Build the Lazy Bug

By POP STICK

THIS is a very simple plane to build and yet it is an excellent flyer with a duration of about three minutes. It is a tractor type that is intended for outdoor flying and when carefully built and lined up it is just as efficient as many more elaborate models.

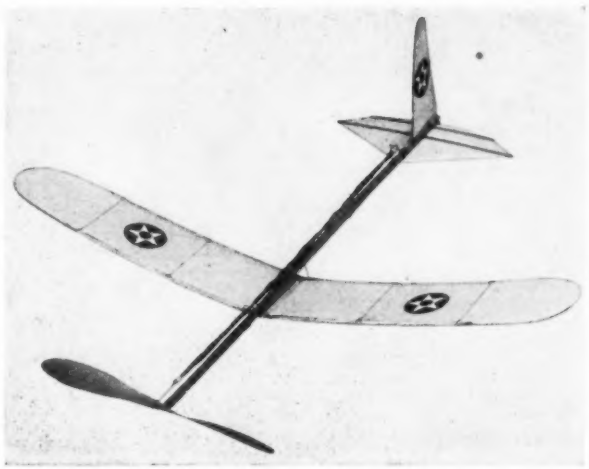
Its outstanding merit, of course, is its simplicity because the wing is flat and because the other parts are attached directly to the motor stick. The accompanying drawings are so clear that not much explanation is necessary to construct it.

However, when covering the wing, do not apply any dope to the fabric, as the shrinkage caused by the dope is likely to warp and twist the wings out of shape or out of alignment. Should the wing become distorted in any way, the model will not fly straight.

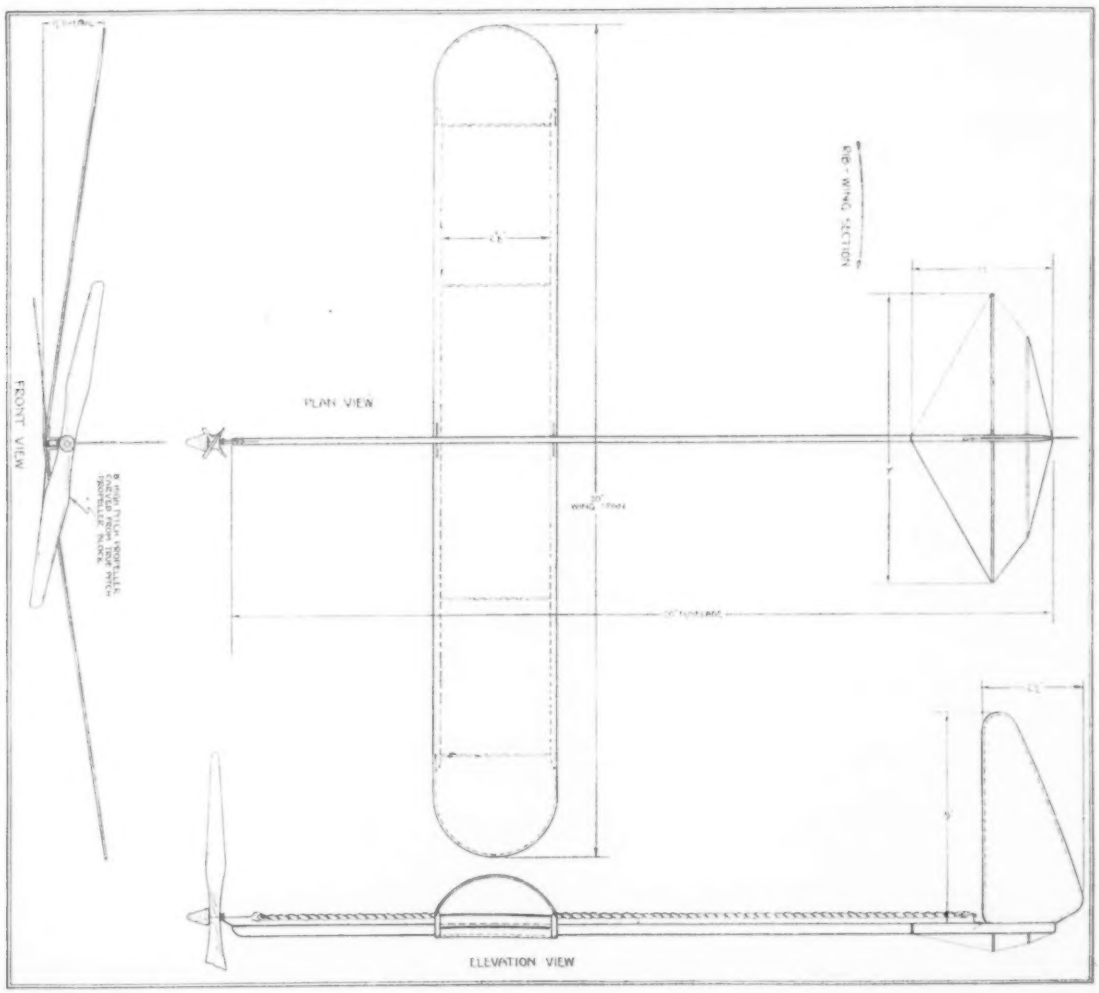
Almost any type of propeller will prove satisfactory with this model, but when duration is the object, the propeller should be of the high pitch variety because a heavy pitch slows down the rotation. The propellers may vary in size from 8 inch to 10 inch in length. It is best to try a number of propellers so that the most suitable size and pitch may be arrived at, and used in the final trial.

For the motor three $\frac{1}{2}$" rubber bands are necessary to drive the heavy pitch propeller. It is preferred that an "S" hook be used at the rear end of the rubber so that a winder can be used.

Motor stick—Balsa... $\frac{1}{8}$"x$\frac{1}{2}$"
Stabilizer—Bamboo... $\frac{1}{32}$"x$\frac{1}{8}$"
Rudder—Bamboo .... $\frac{1}{32}$"x$\frac{1}{8}$"
Wing—Balsa ..... $\frac{1}{16}$"x$\frac{1}{4}$"
Propeller—Balsa .... $\frac{5}{8}$"x$\frac{3}{4}$"
Fittings—Piano wire..0.024"
Covering—Superfine.
Cement.
Rubber motor.
Emblems.



The completed model. It is an excellent endurance flyer. Below, the plans are shown exactly one-fourth the size of the finished plane.



MODEL DEPARTMENT

How to Build *The* ALBATROS

by

JOSEPH S. OTT

IN this issue of POPULAR AVIATION I present a rather tricky model of a ship known during the world war as the Albatros D 111.

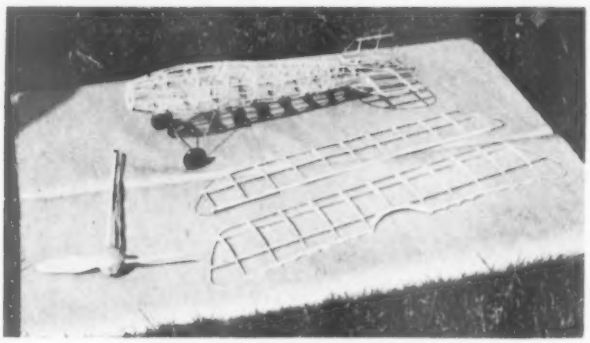
I remember very distinctly the time that this plane appeared because it was described with a large photograph and drawing. At the same time it was classified as a tricky fast plane. The words "As a wasp on a wing" defined its action.

The streamline of this model is perfect. The body is built to a beautiful oval, tapering to the front and to the rear with a motor using a 6" cylinder in line, placed directly in front and an upright position of the pilot seat. The radiator is set in the top wing and the exhaust is run through a piece that is held over the leading edge of the top wing.

The construction of an oval type body is rather difficult and I have tried to eliminate most of the hard work by building a square section for the fuselage. If this square section is built, which is very simple in itself, the remaining parts are added to the top and the bottom side finishing off the oval shape. If this method is employed it will be very easy to make this type of fuselage.

Materials

No. 1. Landing gear—3/32"x¼", hard balsa.
No. 2. Body—10 pcs., 3/32"x3/32"x 30", balsa.
No. 3. Wheels—for 24" model use wheels 1⅞" diameter; for 30" model use wheels 2¼" diameter. Either celluloid or built up balsa.



The fuselage and wing structure before covering.

No. 4. Tail—2 pieces 1/16"x¼"x15" bamboo and 1/16"x¼" hard balsa.
No. 5. Fittings, piano wire—diameter .029.
No. 6. Struts—2 pcs. 1/16"x¼"x15" bamboo.
No. 7. Motor stick—3/16"x5/16"x12" long, hard balsa.
No. 8. Propeller—⅝"x1"x10", balsa.
No. 9. Spars—4 pcs. ⅛"x⅛"x30".
No. 10. Rubber motor—10 ft. ⅛", 30 gauge.
No. 11. Trailing edge—3 pcs. 1/16"x ¼"x30" balsa.
No. 12. Entering edge—2 pcs. ⅛"x⅛" balsa.
No. 13. Rib stock—Balsa 1/32" or 1/16" sheet stock, approximately 2"x 30".
No. 14. Tissue—3 sheets 18"x24", super fine.
No. 15. Lacquer—Black glossy for struts.
No. 16. Cement—½ oz. unit.
No. 17—Banana liquid—Small can.
No. 18. Lacquer—Red glossy and aluminum for propeller.
No. 19. Washers—3 each.
No. 20. German war emblems.

Abbreviated Building Instructions

No. 1. Body.
No. 2. Nose block.
No. 3. Cowling top and bottom.
No. 4. Landing gear.
No. 5. Tail skid.
No. 6. Rudder and stabilizer.
No. 7. Ribs.
No. 8. Assembled wings to body.
No. 9. Outer struts.
No. 10. Motor stick.
No. 11. Propeller.
No. 12. Clips—motor stick.
No. 13. Thrust bearing and shaft.
No. 14. Decorating—emblems.
No. 15. Flying.

Detailed Instructions

Body—No. 1

THE size of the drawing is 6" from tip to tip of the wing. This size can be multiplied to suit the size model you wish to build.

The body in this instance has been shown cut in two because of its extreme length. The body is extremely long and the scale may be taken as an average of 4/5 the length of the wing. If the wing span desired is 30", divide by 5, which gives 6". Then multiply by 4, which totals 24" for the body length.

The side view shows a part of the body built with gauges and made square for the first part of the body construction. The combination on the top side and the lower side is 1/16" balsa.

The highest parts of the cowling should be made first so that the streamline may be true when attaching the fairing strips. These strips may be three on the top side and three on the lower side to act as formers and help streamline the body so that the covering will remain in a true form and not bulge too much between the sections.

Nose Block—No. 2

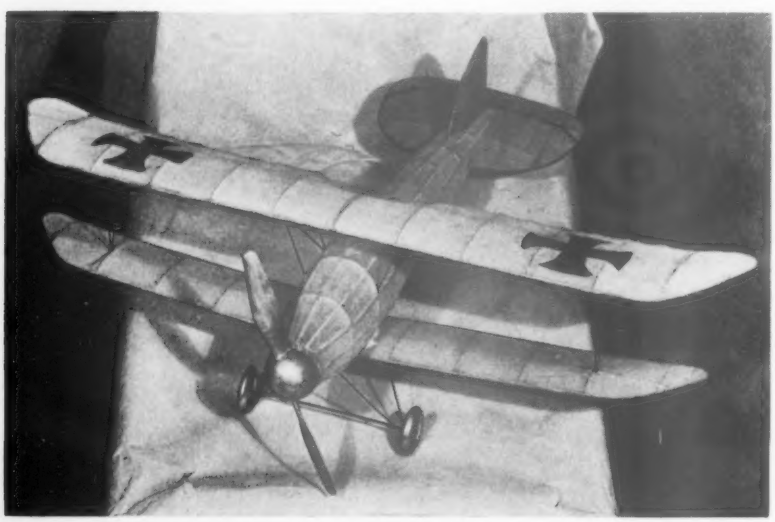
The nose block may be a thin piece of wood 1/16" in thickness and is attached directly to the square part of the fuselage and receiving the faring strips that are attached to the cowling of the body. Although the model will work better with a nose spinner direct on the propeller, it will not be necessary to have this nose spinner and wood to make it fly successfully.

Cowling—No. 3

When attaching the cowling it may be built so that a certain amount of the fittings are eliminated. There are approximately 8 sections in this body and by the time one-half of the wood is eliminated through the building process the body is much lighter.

Landing Gear—No. 4

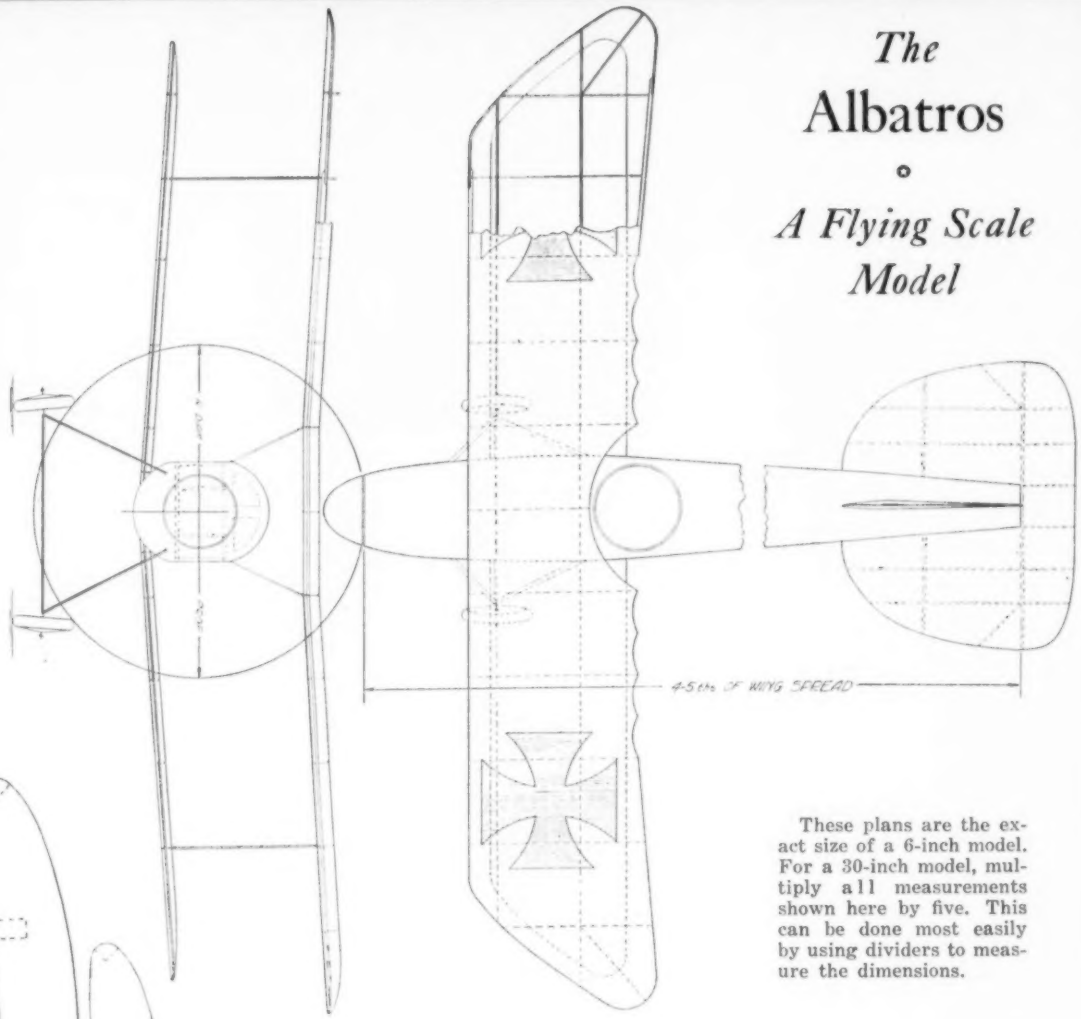
The landing gear is made of bamboo and is attached to the fairing strips



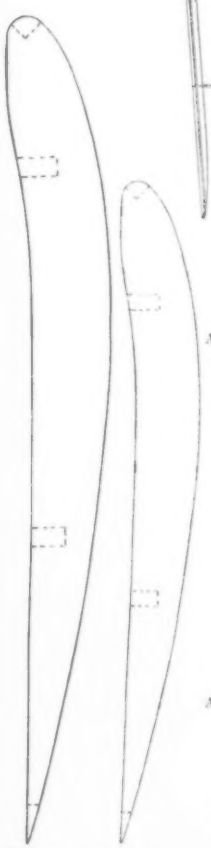
The completed model of the German Albatros, a lifelike and beautiful replica of the famous wartime ship.

The Albatros

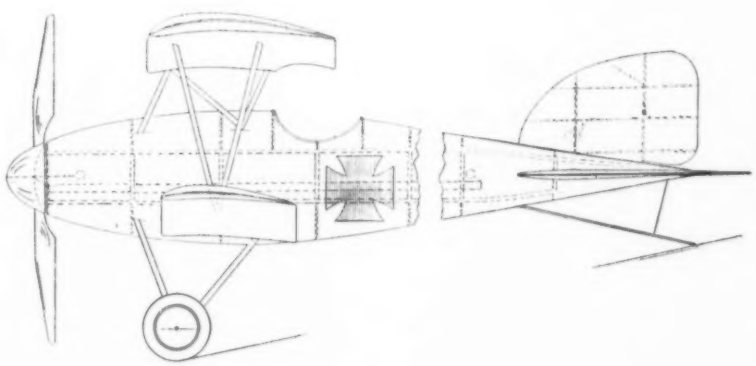
A Flying Scale Model



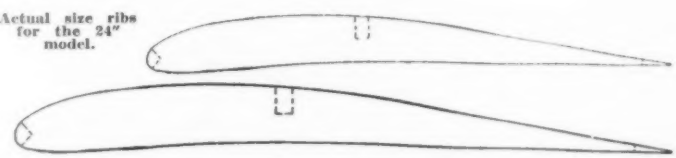
These plans are the exact size of a 6-inch model. For a 30-inch model, multiply all measurements shown here by five. This can be done most easily by using dividers to measure the dimensions.



Actual size ribs for the 30" model.



Actual size ribs for the 24" model.



running fore and aft. The fairing strips at the point where the landing gear is attached must be reinforced direct to the cowling and the square part of the fuselage, so that it will not break off in rough landings. The sizes of the bamboo struts are 1/32"x ⅛".

Tail Skid—No. 5

The tail skid on the model adds a lot of surface to assist the rudder on keeping the model on a straight course. With bamboo used for this part of the structure it may be covered on one or both sides, thus securing either a double or single surface construction.

Rudder and Stabilizer—No. 6

The outline of the stabilizer and rudder is made of bamboo. The inside structure is made up of 1/16" balsa. Both the rudder and stabilizer are covered on both sides. If the rudder and stabilizer has been built to the body, this part including the body should be covered before the wings are attached. In some cases it is necessary to have the landing gear in place only after the landing gear has been completely covered. The cockpit should be made of a piece of thin balsa, cemented on, and then the whole cut to resemble the pilot's entrance to the model.

Ribs—No. 7

Two sizes of ribs are necessary, one for the top and one for the lower wing. The ribs on the top wing are slightly larger and care should be taken so that duplicates are not made, saving a certain amount of labor. At the place where the strut holds the wing to the body it is advisable to make additional small squares of balsa. These parts should be flush with the covering on the wing. The struts may be attached to the wing when assembled to the body.

Assembling Wings to Body—No. 8

If the wing has been covered, the body should be put in a true flying position and the main wing is then held in place by blocking up in the correct plane. The struts are made of thin bamboo 1/32"x8". The ends of these parts should be sharpened so that they may be forced into the balsa when assembling. In this way small adjustments may be made by pushing the bamboo further into these parts.

Check the angle of incidence at this time so that the landing gear is approximately ⅛ of an inch higher than

Photo, R. R. Martin
The Albatros.

the trailer. The wings on this model are not adjustable, as it balances very closely with the arrangement and position as shown on the drawing. This also tends toward making a more rigid job and to getting a more perfect balance. A small weight may be added to the nose if necessary.

Outer Struts—No. 9

The outer strut on the Albatros is similar to that of the Nieuport Scout. The lower wing is attached to the fairing and the dihedral is incorporated only in the lower wing; the top wing may be straight. The struts should be attached permanently.

Motor Stick—No. 10

The motor stick may be made of hard balsa or pine, depending upon the material at hand. The size of this part is approximately ⅛"x¼" for pine and 3/16"x5/16" for balsa.

Propeller—No. 11

The landing gear is built to take a 10" propeller. If an 11" or 12" is desired it is necessary to have the landing gear a little bit higher to compensate for the added length.

Clips—Motor Stick—No. 12

A piano wire clip to fit around the motor stick should be bent to the shape illustrated in the front view of the drawing.

Cement this clip on the nose block, then add a small piece of thin balsa over and against the clip to help keep it in place. This method insures a strong and rigid vice-like grip over the clip and prevents it from being pushed out of place when the propeller strikes an object.

The motor stick is held at the rear, directly below the cockpit, by cutting out a thin piece of balsa, leaving a hole sufficiently large to receive the motor stick, simply allowing it to rest in place.

Another method of holding the stick in place at the rear would be to make a large clip that will reach from each side of the fuselage, having a clip arrangement wherein the motor stick can be pushed into this part of the center of the fuselage.

Thrust Bearing and Shaft—No. 13

Thrust bearings are always a sort of a problem. It seems that the right kind and sizes are seldom at hand. The simplest and best way to make one is to use a small nail, slightly flattening out the full length, but at the point that will be drilled it is flattened more than the other part.

The shaft used for the propeller is made of piano wire .029 diameter. Bend to the shape as illustrated in the side view of the drawing and allow a length of approximately 1½" from the end of the propeller to the hook. If the propeller shaft is made short and stubby, the propeller tends to wabble and does not have as great efficiency as is obtainable with a longer shaft.

Decorating and Emblems—No. 14

The German war circles are used, and the red, white and blue tail stripes are in an upright position. The Spads that were used by the American Division had khaki colored bodies and natural colored wings. Of course, this was not true of all of them, but those that looked the best had a color arrangement similar to this.

Flying—No. 15

Because of the possibilities of damage to a scale model, it is advisable to employ dihedral. Inherent stability is desired of all models, because they do not have the ability to correct their path of flight.

The utmost caution must be exercised in trying out a model the first time. The approximate center of gravity must be located and the necessary weight added to the nose to bring about the meeting point of the center of gravity and the center of pressure.

After this is secured it may be advisable to glide the model minus the motor stick, then adding the motor stick and gliding again and making adjustments for the flight. When the model is ready to be tried, it is advisable to have a boy friend help in adjusting the proper balance, one boy launching it and the other boy catching it—first being very close together and gradually widening the distance until the model glides normally.

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I Break a Record

(*Continued from page* 28)

go?" I pointed to the propeller. "Me no believe, keep um white man cool?" The tank in the back was the next find and the word got around that it contained firewater. What a noise! I told the one that it was gasoline and that it made the big bird go the same as it did their Fords. Another "Me no believe." He was skeptical about everything. I opened a valve and wet my finger with it. "Me believe" which was immediately translated into Indian, "ZXCVBNMASDFGHJKL."

They went off at sundown leaving me alone on the mesa. It was a strange feeling. I didn't know any place could be so lonely or any sunset so gorgeous. There was about every color in the world in it. I don't wonder people get nutty about the west. Sleeping in the front cockpit of the plane was another matter though.

I awoke just before daybreak from my uncomfortable position and realized I could have slept outside, but I had been afraid to try it for fear a sudden wind might come up and blow my ship away off the tableland and I wasn't taking any chances.

A few of the Indians arrived before I got off in the morning and they didn't seem to realize the danger of the prop mowing them down. In fact they were a blame nuisance. As soon as I got in the air I saw the rest of their village headed for the mesa. The ship didn't get off very easily on account of the rarity of the atmosphere and I must have run two miles along the longest dimension of the mesa, before my wheels left the ground. The place was called Anton Chico, although I don't know why a person would bother to name it, and I shan't forget it soon.

Most of the time I was busy checking up my navigation, but once in a while when it got monotonous I would go down stairs—close to the ground—and brush the bushes for a while. I could not do that over the desert proper. It was too hot down there. I picked up a thermometer at Wichita, not knowing how good it was, but it registered a hundred and twenty in the cabin. The desert was sprinkled with meteor craters and one of the big ones must have been all of four miles wide. It was just like a mountain, only growing in the wrong direction. There must have been some fireworks when the meteor that threw it up landed and buried itself in the sand.

I did some cussing at Holbrook, where I landed to make sure of the weather ahead and ran a sharp sand burr in the tire. I didn't know I had a flat because the sand of the airport made the going naturally heavy. When I got out at the hangar the tube was all chewed from running on it flat with the load. They had no other and my spare was buried under a hundred gallon tank filled with gas and a wing bolted down on that. I had the luck to locate a motorcycle tube, three sizes too small, but more than welcome. It is still on the ship.

THE San Bernardino Pass, back of Los Angeles, was full of fog, so I landed at the town of Ontario to find out if the weather was equally bad ahead, and if not, how to get to the Municipal Airport at Los Angeles.

They have been changing the names of the flying fields out there and the man I asked about the Municipal Airport misunderstood my question and directed me to the Municipal Airport at Long Beach. While I was in Ontario I phoned to the Richfield Company in Los Angeles and was told that their man, Mr. Pedri, would be there to meet me when I landed.

The weather seemed to be passable ahead, so I took off for what I thought was Los Angeles. I found the field all right, but there was hardly anyone there, and that seemed strange, as just a few minutes before Mr. Pedri had told me there was quite a crowd waiting.

It had gotten dark and I was blamed tired, having come all the way from Anton Chico, New Mexico, that day. I had asked the minute I came in and was told that it was the Municipal Airport. After being there some twenty-five minutes I came to enough to ask, "Is this the Municipal Airport at *Los Angeles?*"

When I found out it was Long Beach and I had no idea of my way around

(*Continued on page* 48)

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WOMEN'S ACTIVITIES
Edited by Lady Mary Heath

Col. and Mrs. Charles Lindbergh on their tour to the Far East with a Lockheed seaplane reached Point Barrow on August the 8th. Mrs. Lindbergh is the first woman to have flown in the Arctic Circle.

* * *

Lady Mary Heath.

Miss Amy Johnson of England reached Tokyo, Japan, in approximately 78 hours 50 minutes flying time. Her flight from London, with her mechanic, Mr. C. S. Humphrys, has cut the England-Japan record by one and one-half days.

* * *

Lieut. Thomas Steed saved the lives of many women bathing off Atlantic City when he sighted a number of sharks heading inland. He flew in and dropped notes asking the bathers to leave the water immediately.

* * *

Mr. and Mrs. Charles Healy Day are on their round the world flight and have reached Calcutta, India.

* * *

Mrs. Amelia Earhart Putnam gave the Y. W. C. A. an hour's address on Friday, June 19th. She urged that machines were too much man-made-for-men and advised the Y. W. C. A. to stand out for their rights strongly.

* * *

At the end of June, Mlle. Maryse Bastie of France put up a new world's record for a light aeroplane by flying a Klemm monoplane from Paris to Nizhni-Novgorod, a distance of 1,795 miles.

* * *

On the 27th of last month Mr. and Mrs. Richard Humble landed at Heston Park in their Puss Moth. They had traveled from Cape Town, South Africa, in a little over three weeks. Mr. Humble had his flying license nine months, while Mrs. Humble took hers on the day they left Cape Town.

* * *

Mrs. R. S. Barnaby, wife of that well known glider pilot Lieut. R. S. Barnaby, has just taken her glider license.

* * *

Several weeks ago Mrs. Glen Curtiss married a partner and old friend of her late husband, now the president of the Curtiss Car Co.

* * *

Mrs. Floyd Bennett presented the compass used by her late husband when he flew over the North Pole to Mr. C. E. Heller, chairman of the Flatbush Chamber of Commerce, for the Chamber's museum.

Miss Mary Alexander has just returned from a two-way trip to Miami from Lynchburg, Va., in a Moth. The total cost of her flying trip amounted to only $26.00. These figures show the great benefit derived from the use of light aeroplanes, which, to my mind, has been sadly neglected in this country.

* * *

Miss Bobbie Trout and Miss Elizabeth Kelly are opening a flying school at the American Airport on Angeles Mesa, Los Angeles. They intend to use light aeroplanes and to train women exclusively.

* * *

The King and Queen of Siam flew over New York on the Los Angeles, July 27th. Mme. Chayant, lady in waiting to the queen, and Mrs. William R. Sayles, wife of the naval attache to the king, were also present. This, I understand, is the first time women have been taken aboard the machine.

* * *

The National Aeronautic Association met in its annual convention at Washington, D. C., on July the 23rd. Mrs. Amelia Earhart Putnam, the new vice-president, was present. The contest committee of the N. A. A., making known its annual report, noted with interest that during the past year women made six of the eight International records of the year.

* * *

Mrs. Umberto Loffredo, who is challenging Miss Ruth Nichols to travel solo across the Atlantic by air, has bought the "Liberty" from the pilots who recently so successfully took it across the ocean. The name will remain as it is. She has recently had her first flight in an Autogiro.

* * *

Kansas women are now staging formation flights. Seven of their women flew in formation in the public aviation programs there at the beginning of this month.

* * *

Dr. Bessica Raiche, America's first woman pilot, who took her license in 1910, is practicing medicine in California and is reported to be staging an aerial comeback.

* * *

Mrs. Irving Thier, formerly Miss Nancy Hopkins, who was so well placed in the National Air Tour of last year as pilot of a Kitty Hawk, is not giving up flying with her marriage. She is president of the local unit of the N. A. A.

* * *

There are now in America, according to statistics, 470 women pilots, of which 55 are limited commercials, 35 transport pilots, 5 mechanics and 4 hold glider licenses.

The first all women air race meeting this summer at Baltimore is being successfully copied in Great Britain. The Northants Aero Club has in hand an original scheme. This time it is a flying meeting for women on September 19th at Sywell Aerodrome, conducted and arranged by the Ladies' Committee, at which all the flying will be done by women pilots.

* * *

Miss Elinor Smith has decided to fly the Atlantic in a Lockheed with a Wasp motor. She has been making a number of flights recently on the machine to get herself prepared for this flight.

* * *

Miss Juanita Burns of California has announced her intention of flying nonstop from Seattle to Tokyo, and has written to the local representative of the N. A. A. to inquire about the prizes.

Lightplaning in Past Years

(*Continued from page* 24)

powered with a motorcycle engine as standard equipment instead of the Meteormotor.

The popular Lincoln Sport Plane, that was placed on the market about five years ago, was the Swanson biplane of 1922 redesigned for higher performance. The span of 20 feet was three inches greater than that of the original plane, the U. S. A. 27 wing curve was substituted for the U. S. A. 15, and an Anzani 35 H. P. engine used instead of the original Lawrence 28. The plane was designed by S. Swanson, and might be described by the rather alliterative phrase of "S. Swanson's small, sturdy, streamlined, swift, single-seater sport ship."

In 1925, Harvey Mummert again showed his skill in designing small airplanes when he built a little low-wing monoplane, powered with a Harley-Davidson motorcycle engine. The wing was of the tapered cantilever type, and the ship was equipped with a split-axle landing gear, these features giving it a smart and up-to-date appearance. The "Flying Arrow," built by Bert Mix the same year, was a motorcycle motored biplane with a span of only 12 feet, probably the smallest airplane using this type of engine ever built. It was extremely light, and flew fairly well.

I have necessarily omitted many excellent sport planes from this discussion, but have tried to include all the interesting ones. When comparing the small planes of several years ago with those of today, one finds that the present trend is toward the monoplane type, giving a greater wing spread than the biplane.

A plane with an extremely small span might seem "cute" to some people, but is apt to be described in less affectionate terms by the pilot, for it is so quick on the controls that it is difficult to handle without extensive practice.

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But aviation offers more than this. It offers the prize of **big money** that always goes to the men who can **do things.** It offers money—plenty of it—to spend on yourself and others—for clothes, travel and all the good things this old world is full of.

And now is the time to prepare. If you're a man of action you can soon be riding on the crest of the greatest wave of prosperity American Aviation has ever known.

Trained Men in Demand

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The Dayton School of Aviation

Desk 4710, Dayton, Ohio

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Glider Notes

(*Continued from page 33*)

ground. It is good judgment to take your time and not try to hurry the pilot.

Finally the car speed is increased more and the student pulls back slightly on the stick. The glider rises 2 or 3 feet from the ground. Keep making hops with this height while the pilot becomes more familiar with the use of the ailerons and learns to land his ship. Gradually the speed of the car is built up until the pilot can climb up first 5, then 10, 15 and so on up to 30 feet altitude.

It is not practical to climb higher in the open type primary, no matter how good the pilot is or how much a spectacular flight is needed. Keep on practicing straight flying behind the car.

I Break a Record

(*Continued from page 45*)

over a strange city, I had another pilot lead the way to the other field. There was a crowd there and the photographers kept me posing, which was the last thing in the world I had any desire to do.

The officials added up the time and I was glad to have established a new record, knowing that the chances were it would not be my record long, but that would be just what I wanted, to stir up interest in junior flying. The Richfield Oil Company presented me with a traveling case that is a beaut, with places for everything and lined with oilskin, and the whole thing is as light as a feather. From then on I dragged it around with me everywhere I went after that.

I knew that Charlie Dann would want to know how I made out, so I phoned him. It was midnight when I was able to break away to do it, so it must have been three o'clock in the morning in Westfield. I think I got almost as much of kick out of phoning three thousand miles as I did out of *flying* that distance.

I spent most of my time in Los Angeles at the airport seeing that work was done on my ship and motor. I did take a few minutes to deliver two letters, one from Jimmy Walker and one from Mayor Hague, to Mayor Porter of Los Angeles.

Mr. Pedri took me to the "Breakfast Club" in Los Angeles. I never heard of any similar institution. It is like a night club, only for a little later on. You ate breakfast there in a beautiful grove, where everybody made friends with everybody else and sang. The management put on a show and gave a setting up drill.

WHEN I finally got back to the airport the work on the ship was done and she appeared to be in A1 shape. I was up early the following morning and hopped off for Albuquerque. I hated to leave California, it had looked so good after the miles of desert I had flown over, but, of course, I was interested in seeing what the ship would do with favoring winds.

You can usually count on a tail wind going east. But no such luck for this boy. I bucked headwinds in both directions. However, I can manage to be thankful they weren't crosswinds, which not only cut down your forward speed but throw you off your course. I enjoyed the flight back. Knowing the route, I didn't have to strain so

(*Continued on page 50*)

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You Are Now a Caterpillar!

(*Continued from page* 18)

Texas. He was practicing aerial combat tactics, and fate destined that his plane should collide with the one piloted by Lieut. Charles D. McAllister. In none of the reports covering his four jumps does he make any mention concerning the state of his feelings at the time of receiving his degrees.

Fay Gillis, the second woman to become a member of the Caterpillar Club, said she had no time to analyze her feelings during the course of her initiation, for hardly any time elapsed between the pulling of the ripcord and her landing in the top branches of a tall tree. She was a passenger in an airplane piloted by Lieut. John Trunk.

Something went wrong when the pilot decided to perform some upside down flying, and the plane suddenly went into a fast dive. Miss Gillis sensed that she was due for some mighty quick action. Being in an upside down position, it was only natural that she should fall out of the plane when she unbuckled her safety belt. It was the first time a man and a woman were initiated into the Club at one and the same time.

FAILURE of the safety belt during the course of acrobatic maneuvers was instrumental in the unceremonious initiation of several members of the Caterpillar Club.

Captain John I. Moore is one Army flier who was "bounced" out of his airplane before he knew what it was all about. Riding in the rear cockpit from Waco to Dallas, Texas, the balmy Texas sunshine had evidently lulled him to sleep. Suddenly the plane encountered a rough current of air, bumped, and the Captain, rudely awakened, found himself heading for parts unknown.

"Surprise is no name for it," was the way he put it in relating his experience. "I reached for everything in sight, like a drowning man clutching at a straw, but my hands encountered nothing." Free of the plane, he pulled the ripcord and landed safe and sound in a cotton patch. How his safety belt happened to become unfastened is a mystery even to this day. And the peculiar thing about the whole affair is that the pilot in the front cockpit was unaware that he had lost his passenger until he reached his destination.

Lieut. Apollo Soucek, famous Navy flier, who holds the world's altitude record for both airplanes and seaplanes, was not particularly optimistic as to the outcome of his initiation.

A collision during the course of aerial combat maneuvers caused Lieut. Soucek's plane to go into a violent diving spin. The centrifugal force imparted through this maneuver held him fast in his seat. When he released his safety belt, it seems that in some unaccountable manner he pulled the ripcord of his parachute. His life already in danger, this unwitting act made matters still worse. The only thing Lieut. Soucek could do was to hope for a good break. He did not get it, for when he finally managed to push himself out of the cockpit the parachute opened immediately, caught on the tail of the plane and hurled him around in the air like a pendulum.

In the meantime the plane was hurtling towards the ground, carrying the imperiled airman down with it to what seemed certain destruction. All of a sudden, kind fate intervened. There was a welcome jerk when the parachute tore itself loose from the tail and threw the imperiled airman off into space like a stone from a sling-shot. His hopes, however, sank again when, on looking upward, he saw a great hole in the silk, with all indications pointing to a total collapse of the chute.

The ground was coming up fast, and he luckily hit a soft spot in some sagebrush. A fellow flier who witnessed the accident stated that Lieut. Soucek bounced about ten feet when he hit the ground. His experience was such as is calculated to add many white hairs to any normal man's head. He was lucky to survive the initiation with only a sprained back.

A peeved feeling over the manner in which he was initiated into the Caterpillar Club was the main reaction of Lieut. John M. Donaldson, of the Alabama National Guard Air Service.

Flying on a radio mission with Lieut. Luther N. Johnson, of the same organization, and while over a densely wooded section of the country, with no landing field of any sort within gliding distance, a perverse motor took a notion to go on a strike. There was no lengthy council of war between the airmen as to what course to pursue. The decision to go through with the initiation was moved, seconded, and carried unanimously.

"I was able to think clearly and did not become excited," Lieut. Donaldson afterwards stated, "for it seemed there was no great hurry, but plenty of time. All my actions seemed deliberate until the time I pulled the ripcord, at which time I seemed to quit thinking, and when the 'chute opened and snatched me, it made me angry until I realized that I was suspended in the air. This feeling was about the same as when someone hits you on the back unexpectedly."

A YOUTHFUL Dayton novice in the art of flying, who was fortunate to be possessed of enough worldly goods to be able to purchase his own airplane, proceeded to take flying lessons at a certain civilian flying school.

They changed instructors on him so often that, when he was through with the course, a very important phase of the flying art—the ability to pull a plane out of a spin—was omitted from his course. To indulge in a Scotch jibe, this omission was a most "costly" one, for a perfectly good airplane was completely "washed out."

On a bright summer day the young man decided to fly to Alliance, Ohio, and, as fate would have it, the plane went into a spin from about 4,000 feet altitude. Not knowing what to do in such a predicament, he placed the controls in neutral and "went over the

(*Continued on page* 51)

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The original price of this set of books was $3.00. Now I'll send the whole set of five books to you for 98c postpaid. If you don't want the whole set, I'll sell you single volumes for 25c each while they last.

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Fokker vs. Byrd

(*Continued from page* 14)

Not being needed, I, too, was not at Garden City. The first I knew of the take-off was when the morning papers were delivered at my door. I thought that Mr. Fokker, of course, had been present, hence when I reported to him by telephone late that morning I told him where the "America" had last been sighted. *He did not know they had taken off.* So that flight really was a "Byrd" instead of a "Fokker" expedition.

It must be remembered that the planes used for both the North Pole and the Atlantic flights were *purchased* from Fokker by Byrd; they were by no means given to him. Neccessarily, they were not regularly equipped models, and as is the case with all custom built articles they commanded a price comparable with the design and special features involved. Fokker himself was a wealthy man; but his American company certainly was not in financial position to bestow expensive gifts on any one.

At the same time, it should be remembered that Byrd was not the only man who enhanced Fokker's prestige. United States Army pilots, Lieutenants Kelly and Macready, had made the first non-stop transcontinental flight, from New York to San Diego, a distance of 2516 miles, in 1923—four years before the flights across the Atlantic. And on the very day Byrd and his crew were flying to France and additional glory for a Fokker airplane, a sister ship was negotiating the Pacific, from California to Honolulu, under the able direction of two other Army men, Lieutenants Maitland and Hegenberger.

The rift between Commander Byrd and Mr. Fokker steadily widened. Fokker couldn't forgive Byrd for not getting a Fokker across the Atlantic before any other make of plane had made a non-stop flight across it; and to him the unfortunate landing in the dense fog at Ver-sur-Mere, instead of on the brilliantly lighted LeBourget Airdrome, obscured by the fog, seemed a personal affront. He completely forgot the glory of the more difficult Pacific crossing at the identical time, in his disappointment at the outcome of the Atlantic crossing.

During all of this time, Ford was going into aviation deeper and deeper. The first venture was a high winged, single engine monoplane. Experiments went on and on in their well equipped laboratories, and meanwhile the Fokker three-engine high wing monoplane, tradenamed the "Trimotor," continued to gain in favor.

It was only natural that Ford should have followed in the footsteps of the leader. The story went the rounds in our organization that when the first Fokker Trimotor (the one Byrd flew to the North Pole) was in Detroit, late in 1925, that a mechanic of our crew slept in the plane to guard this brain child of the famous airplane designer; that one night he was rewarded by being awakened by a distinguished group of Ford officials, with tape measure, pencil, and paper; that he leisurely climbed out of the plane and offered his assistance.

The story seems a bit far fetched, but the Ford Trimotor which was later introduced proved certainly to be not only a copy of the Fokker Trimotor, but a good copy at that, although it was executed in all metal, while Mr. Fokker's designs were constructed of a metal frame, with fabric covered fuselage, and wooden wings.

The war was on. Fokker spent his leisure designing parts to improve the Ford automobile, and particularly its engine; one corner of his living room was the stock room for the various parts on which he was working. It was too bad he didn't offer a good cheap car to the public, for I believe he could have done it. It was not unusual during those days for our Sales Department to receive letters asking for quotations on the "Fokker-Fords."

All this meant not only competition, but competition of the stiffest sort with the world's greatest automotive manufacturer. It meant that both organizations had to be continually on their toes. It was a grand game in which Fokker joined with his usual aplomb and assurance; he always has been certain that when better airplanes are built, he will build them.

I left the Fokker organization before Commander Byrd's Antarctic expedition begun. I therefore don't know the details of the balance of the controversy between these men. I only know that a *Ford* Trimotor went along to the South Pole, instead of a *Fokker* Trimotor, and that the single engine Fokker Super-Universal, which was included in the equipment of the expedition proved to be in good company. What happened to the Fokker Trimotor which was designed for that expedition? Ask Amelia Earhart; its successful crossing of the Atlantic was the start of her illustrious career.

I Break a Record

(*Continued from page* 48)

to distinguish landmarks as I had done going out.

It would have been easier to follow the oil pipe line from Wichita to Amarillo, Texas, and from there another pipe line to Los Angeles, but that way is considerably longer and consequently slower. Going back, though I could remember having passed over many of the features of the landscape, and another item was that I didn't have the glare of the sun through all the glass and celluloid panels in the front of the ship all through the long afternoon.

In Albuquerque some kind of historical pageant was going on and they insisted on my staying to watch it. About a thousand Indians were doing war whoops. We couldn't make out whether the songs were different songs with the same words or the same song with different words. When you saw the way they acted, pushing one foot along in the dirt, digging in first with the toe and then with the heel, at the same time hopping on the other foot, you didn't wonder much that the white men were able to do some sharp trading and get Manhattan Island from them for the price of a hundred gallons of gas.

After the first hour or so their performance was terribly boring; they reminded you of a lot of small children showing off in front of grown people, so I was plenty glad when a sand storm came up and we could clear out.

The field at which I put up was an hour's drive from town. Western Air Express uses it, as it is a high mesa and the planes can leave and be on their courses. The other field that T. A. T. uses is nearer the town, but you have to circle it several times to get enough altitude to clear the mountains. They always think up some good reason to put aviation fields as far away from the town as possible.

Left for Wichita in the morning and ran into the entrants in the Pacific Coast Women's Derby. I had met them on the coast, so it was like a reunion with old friends. Three of the girls came in several hours late on account of one of the girls getting off her course and the other two following her.

Off again early for Columbus and through dirty weather all the way, but it was of no consequence, as over that farming land any field can be a landing field. The forecast at Columbus for points east was thick stuff, so I waited, not caring about going over the mountains in Pennsylvania until it had lifted. It hadn't cleared up a whole lot even by the next morning, but I pushed on through. There wasn't a smooth spot to sit down for miles and I was happy that the old coffee grinder up front kept singing along.

Landed at Roosevelt, having been in the air twenty-seven hours and some odd minutes. Then for the first real sleep in weeks. Gee, it was good.

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You Are Now a Caterpillar!

(*Continued from page* 49)

side" with his parachute, although he experienced considerable difficulty in getting free of the plane because of the centrifugal force of the spin. All his thoughts being centered in his struggle to free himself from the plane tended to crowd out all other thoughts. When he yanked the ripcord, he felt so sore over losing his plane that he threw it away from him as far as he could. Thus, anger banished all fear.

"Casey" Lambert, a member of the Missouri National Guard Air Service, who flies in his own airplane all over the country mainly for the sport of the thing, and has his chauffeur following him in a big high-powered car, started cutting some capers in the air with a high speed commercial plane. A commercial plane, let it be known, is not supposed to be able to withstand certain acrobatic maneuvers practiced with military airplanes, and this particular ship which Lieut. Lambert piloted was no exception to the general rule.

As if in protest against the rough treatment it was receiving, both ailerons severed their connection with the plane then and there and sought peace and seclusion elsewhere. The pilot and his passenger realized immediately that they were in for a double initiation into the Caterpillar Club.

Flying Cadet John L. Magden, piloting a bombing plane, found nothing to enthuse over when his ears detected a snapping sound and the steering wheel rolled free in his hand, leaving him with absolutely no aileron control. He did enthuse, however, over the prospect of joining the Caterpillar Club.

"I was fully conscious at all times before and after the jump, and my mind seemed to be exceedingly clear, knowing exactly what I was doing at all times. After leaving the ship, and before I pulled the ripcord, I had absolutely no sensation of falling. It was a very comfortable feeling—similar to lying in a feather bed."

"The thing that was uppermost in my mind," Captain Earl H. DeFord stated, following his jump caused by a collision in the air, "was the fear that I would not be able to get out of the ship at a sufficient altitude to permit my 'chute to open." He experienced considerable difficulty in getting out of his cockpit when moments were very precious and the altimeter indicated a truly alarming rate of descent.

Fred Philbrick took up a new airplane for the purpose of determining its spinning qualities. It did not take him long to discover that spinning was this plane's specialty. During the course of the last spin the pressure of his body against the safety belt proved just too much. Philbrick's departure from the cockpit was as sudden as it was unexpected.

On his way out he struck the upper wing, breaking his goggles, cutting his nose and bruising one eye, and he was almost out. In his dazed condition he was uncertain whether or not the parachute was strapped to his back and he felt around for it. His fears were immediately allayed, and the parachute, as usual, "did its stuff."

Of late, reports from Caterpillars have become so commonplace that one cannot find therein anything calculated to cause the imagination to run riot. In many instances there was submitted for an illuminated report a brief statement giving the cause of the accident, supplemented by a paragraph to the effect that they had no feelings of apprehension because they had complete confidence in the parachute. And well they may have had, considering that the parachute has already saved nearly 400 lives in this country, with no figures available as to how many additional lives were saved in other countries.

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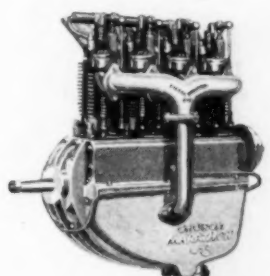

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The Dirigible Is Practical

(*Continued from page* 21)

dling the trolley equipment. Others hold down the tail. An order is issued, the mast starts moving outward slowly, drawing the airship after it. In spite of the high wind past the doors, the huge bulk of the "Akron" does not move perceptibly sidewise, so securely is it held by the trolley cables and by the mast.

In a short time the ship is clear of the dock, trolley cables are detached, and the air monster swings through a quarter turn like a giant wind vane.

The captain gives an order, and the engineer officer signals for all engines to idle, and for the forward one on each side to adjust its propeller thrust downward. Eight mechanics in the engine rooms repeat this order back to the control cabin, and immediately all propellers start turning.

At the order of "Let go," men who have been holding lines from the ship release their holds, the pelican hook in the mast is tripped and the mooring cable thus released. The "Akron" rises majestically, but seems a little heavy at the nose. The captain orders the deck officer to adjust the trim, and immediately the "galloping kilos" go into action. These are men, stationed in the three longitudinal corridors, who, by running forward or aft, shift the weight distribution and thus trim the ship.

In addition, the two forward engines are ordered set at two-thirds speed and the remaining six at one-third. The nose of the ship points upward into the sky, altitude is gained, all engines are set to "standard" speed, and the two forward propellers adjusted for horizontal thrust. Trailing radio antennae are dropped.

The "Akron" is on its way to the theater of war.

DURING the take-off, five officers and two men have been on duty in the control room, and every other man was stationed at his proper post.

Now, however, the ship faces over two days of comparatively inactive flying, so the captain, after having two of the engines stopped, indicating the altitude to be maintained, and arranging other details, institutes routine sea conditions.

The "sea watch" includes one man on duty in each engine room, one radio operator at his instruments, the deck officer in charge of the control room, one man on the rudder and another on the elevator controls, a junior deck officer on duty in the chart room, and several other men scattered throughout the ship, making routine inspections of gas valves, fuel equipment, gas cells, and the like. The others are off duty, the officers carrying out their "off watch" duties. The watch is changed every four hours.

Word is received that the enemy fleet is moving southward, and that its scouting line is well out. A map of the exact probable positions is radioed to the airship. Accordingly, the course is changed slightly. The ship, in due time, takes station in "our" scouting line.

Later, orders are received to perform the special duty of bombing an important cable station of the enemy's, on a small Pacific island. Some hours later the lookout sings out "Land ho," and the ship rises to a higher altitude, the captain believing that anti-aircraft guns and possibly a plane or two are preparing to welcome him.

Sure enough, there is a flash of fire from the island, and white puffs of smoke ahead of and below the ship mark where the shells exploded. Another burst, and the puffs are closer. A third, and reports come from a man in one of the corridors that several holes have appeared in the cell he is watching.

The captain orders all engines cut in at full speed, and has the first lieutenant drop some ballast. Immediately the "Akron" climbs upward three thousand more feet, out of range of the island guns. Then the ship's five airplanes get busy. One by one they are dropped through the opening in the bottom of the hull. Three of them hurry away to reconnoiter, while the two remaining ones lay a thick smoke curtain below the airship.

Behind this blanket, the "Akron" waits until the planes return. The squadron leader, after the airplanes have been caught and drawn up, one by one, to their places, reports that several enemy scouting ships are approaching from the northwest, and that among them is a fast airplane carrier.

AGAIN the "Akron's" planes are sent out, this time to lay a thick smoke curtain at a lower altitude. This accomplished, they deploy about the airship to watch while the next maneuver is carried out. From the bottom of the airship drops a small car, resembling a very stubby airplane fuselage. It has rudder and elevator. In it sits a man, a helmet containing telephone receivers over his head. A cable, carrying telephone wires, connects his car and the airship. Rapidly he is lowered, as the airship drops to within a short distance of the thick smoke screen below.

The observer in his little car passes through the smoke and hangs, suspended by a half-mile of cable, an invisible speck in the sky. He is the "eyes" of the airship now. Under his directing, the airship maneuvers to a position almost directly over the island, and drops a bomb. It lands in the sea near the shore. The observer gives directions. Two more bombs, and the mark is found. Destruction of the cable terminal and its adjoining radio station is soon effected.

Just then a lookout reports that airplanes are approaching from the west. There are two dozen of them, evidently from the small, speedy, airplane carrier of the enemy that had been sighted by the "Akron's" aviators. The Zeppelin's planes rush to meet the foe, drawing eight of the enemy flyers away from the airship. The other sixteen, diving from a higher altitude, are about to open fire. But the airship captain had been expecting this.

At a signal from the skipper, the gunnery officer orders all guns covering the oncoming planes to open up. There is a burst of fire that does not even jar the airship, but which brings down six of the enemy planes. The heavier, longer-ranged guns of the "Akron," firing from a platform steadier than any surface vessel and almost equal to solid land, have reached the enemy before he had a chance to come within striking distance.

The remaining enemy planes zoom over the airship, spitting bullets. Hundreds of holes are made in the hull-covering and gas cells, a girder is struck here and there, and a dozen steel wires are snipped in two. But the airship seems not to feel this.

The enemy planes gather for another attack, but the airship, maneuvering to bring practically all of her guns into play, and to gain altitude, opens fire

(*Continued on page* 56)

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P. S. Many excellent features have already been secured for the November issue. Subscribers will get their copies a week earlier than the newsstand buyer.

The Dirigible Is Practical

(*Continued from page* 54)

as before when the planes are still at a comfortable distance. In addition, the ship's five fighting planes are still hard at work. The result, five more planes down. The remaining nine planes, four having been forced down by the fighting planes in the first encounter, take to their heels and disappear into the west.

All of the "Akron's" planes but one returns aboard. That one is unable to "*land*" because its trapeze hook has been shot away. The pilot makes for the island that had been bombed a short time before.

Taking stock of the damages, the captain finds that he has lost one man, a lookout, seriously wounded by a machine gun bullet; two fuel tanks through penetration of bullets, and the plane. In addition, there are the few hundred holes. But they are soon sealed by temporary patches that will be replaced when the ship returns to a base; the girders and wires are repaired, and before nightfall the "Akron" is as fit as a fiddle. A negligible amount of helium was lost in the fray.

That night, the airship seeks out the enemy fleet, hovers safely high above the ships and uses its bombs with gratifying results. The airship is invisible in the darkness, and the surface ships are afraid to reveal their positions to other surface and underwater craft by using searchlights. But to the men aboard the airship, each of the enemy's ships is easily located by the glow of its boiler fires.

A week later the "Akron," having used most of its bombs and a good portion of its food stores and fuel, is relieved by the refreshed "Lakehurst" and proceeds to a South Pacific Island base for a minor overhauling while moored to an airship tender there.

Thus, an airship, costing less than $3,000,000 in comparison to five times that amount spent for a surface scout cruiser of somewhat corresponding function, and carrying less than a hundred men, has destroyed any times its weight in surface craft and airplanes, bombed an island communication center, and, most important of all, has relayed back to the fleet commander-in-chief information of inestimable value.

You are left to imagine what a fleet of such airships would be able to do.

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Lessons in Flying

(*Continued from page* 40)

but if it is held back continuously, the ship will go through a series of stalls and dives. For example, it will stall and dive, then come up and stall again, dive and stall again (whip stall), and so on so long as the stick is held back or so long as there is room below. The great difficulty is to keep the wings leveled off so that the ship will not go into a spin when it is stalled."

BOB took over the controls, cut the engine, and pulled way back on the stick. The nose went up, and soon Bob felt the sloppy or slack controls that told of a stall. She slipped back some while the stick was held back, and then the nose came over and lown at which time the stick was placed forward for the dive. This was simplicity itself and was repeated several times until the last one brought them uncomfortably close to the ground.

The figures in the diagram show the successive attitudes of the ship during one of the stalls. In Fig. 4, we show the successive "whip" stalls that take place when the stick is held back steadily, one stall merging into the next until all of the altitude is lost.

"Say, the controls certainly feel loose when she is stalled," exclaimed Bob. "You can jolly the stick and rudder around just as if she were standing still on the field, and the more you move them, the less will happen. The funny part of the thing is though, you would hardly notice when she is stalled in any other way except for putting your hand or face out over the edge of the ship. Say, Ed., is there any other way of stalling the ship?"

"Yeah. Plenty of them. What are you asking me this fool question for when you have been stalling her steadily yourself all during the course? If you are just looking for an answer rather than to go to the trouble of thinking, I'll tell you once more.

"Anything that reduces the speed will cause a stall. Climbing too steep for the capacity of the engine, taking turns at low speed, trying to zoom when you haven't sufficient speed and trying to take off at about 15 miles per hour. Any or all of these things will stall the ship. You ought to know, you've tried 'em often enough. Then again, there are some ships built with the engine way above the centerline of resistance, and when this sort of a ship gets into trouble it is something awful. The minute the engine cuts out, up comes the nose and into a stall she goes—automatic like—just at the time when your yearning is for a nice swift dive.

"Now, we will start the side-slip, which is just another altitude losing stunt, useful as I have already explained, for making landings in small fields. Besides, it is always a good circus stunt and quite impressive to see the ship slipping down sidewise as she floats along. The wings have no support in such a case, and the sides of the fuselage are the only surfaces that check the descent of the ship. We wheel over on one side so that the wings are vertical, then slide along this way until we wish to straighten out. At this time, the tail is lifted up for going into the dive that brings us out straight again."

This maneuver is illustrated by Fig. 5 where the ship enters into the side-slip at (1), is over on its side at (2) and then continues on its side until we start to pull out at (4). The tail goes up higher at (5), then into the dive and out again at (6).

"Now take the controls over and do as I tell you," said Ed. "Jerk the control stick sharp to the left. Now hold it there but move it slightly forward. Now give her right rudder. Hold it until you have lost 500 feet."

Bob held it in this position and was surprised to see how fast the needle of the altimeter moved toward the zero end of the scale. They were down to about 1,500 feet, when Ed's voice again came over the phones.

"Pull your stick back slightly to raise her nose. That's it. Now give her left rudder. Now pull back and bring her up into the horizontal again. Level off. That's all there is to it, now try it over again. This will come in handy more than once, I'm telling you."

This time Bob climbed her up to about 4,000 feet and side slipped about 2,500 feet of this distance, holding her very steadily and evenly during this time. Altitude is lost in this way without any material increase in the forward speed of the ship, and for this reason is often preferable to diving where much height is to be lost in a short time. The maneuver originated during the war and was highly successful as a means of getting down out of the air during an attack where the field was limited in size.

"Now we have had enough for today," said Ed, "and tomorrow we will have a nice long session with spins—their cause, cure and effect. You have been in one spin and lived through it, so tomorrow come here in expectation of having a thousand dollars worth of thrills for a very moderate sum. Since there are so many flying failures or defects that cause spins, it is only natural that recovery from spins is one of the most important things that we have to learn."

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Clifford Allsopp's Diary

(*Continued from page 10*)

THE fifth American plane to go down was the one occupied by Chapin and Laird. Laird's description of the battle follows:

"Our bombs had hardly been released when we were attacked by a horde of Huns, coming from below us and in front of us. They outnumbered us about four to one so it was not long before they had broken up our protective formation and surrounded us on all sides.

"Recollection of the next half hour is mercifully blurred, Boche planes seemed to fill the air, they would zoom up beneath us, apparently hang suspended while they fired their bursts, then fall away and zoom again.

"The rattle of machine guns could be heard even above the noise of the motor and the rush of wind, and as one of the Huns fell in flames, the roar of its exploding tanks drowned out all other sounds. The Hun plane was followed by one of ours, two huge balls of flame trailing dense black smoke; the sight was terrible and magnificent.

"One of my guns jammed, but I continued to fire with the other, as fast as magazines could be changed. We nosed over, followed by two Boche, then we were enveloped in a cloud, closely shut in by a dense fog, and a deathly silence prevailed, broken only by occasional back firing of the motor as it got a little gas. Our tanks had been riddled and gasoline spurted from the holes, soaking the machine and my flying clothes from the waist down.

"I vaguely remember unfastening my safety belt and frantically waving toward the emergency tank as I shouted to 'Chape,' but he grinned and shook his head as he worked at the pressure pump. The emergency tank had also been punctured, so all that was left for us was to glide down.

"As we came out of the cloud we were welcomed with a burst from Archie, so near us that we were forced to a steeper glide. The good old motor would roar occasionally as it picked up a slender ration of gas, then cough for more. Archie continued to fire at us, until we were almost on the ground.

In the distance I could see the three fingered lake which points to Verdun, St. Mihiel and Pont a Mousson, and just beyond which were the American lines. Almost down, the engine seemed to receive new life and 'Chape' tried to zoom the telephone wires just ahead, but it was too much to ask and the motor died as we crashed into the wires.

"When I awoke I was lying on the ground, staring up into the overturned cockpit from which I had been thrown. 'Chape' was hanging limply from his cockpit, one foot hooked beneath the rudder. I shall remember the lost feeling that swept over me as long as I live. I loosened him from the wreck, laid him on the ground, opened his flying clothes and joyfully found that he still breathed.

"A slashing of the wing nearest me as a boot came through it, told me where we were, if I had doubted it before. The field where we had crashed soon swarmed with Huns as they ran from their quarters in the village only a few blocks away."

ONLY one American plane returned from this terrible battle. The occupants, Oatis and Guthrie, were in continual combat from the time of the first attack until they at last crossed the lines north of Verdun and shook off their last pursuer.

In the beginning of their long and tremendous struggle there were eleven Huns on their tail, but they eluded one after another by dodging through the clouds, diving sharply or following a zig-zag course. They were able to escape only because Guthrie at a most vital moment sent one persistent Hun down in flames just before the German shot them out of control.

It was a wild and thrilling race, both of the Americans being completely lost and having to rely on the position of the sun to get the general location of our lines. And it was a dismal story they had to tell when they landed at the home airdrome about dark.

At this time, because of their enormous losses, all of the day bombing squadrons were badly in need of replacement pilots and observers who were coming through too slowly to balance the appalling number of casualties.

Allsopp's diary—October 4.

"On October 1 was still without a regular observer, and Lawrence Ward and I were temporarily assigned to the 96th Squadron to fly a Breguet with one of their formations on October 2.

"We bombed St. Juvain and were immediately attacked by a number of enemy planes. Evidently a bullet cut my gas line or disabled the motor. In any event, the motor cut out and we started down with two Boche on my right and one on my tail. The two on the right were between me and the lines and I could not make a right turn to head for the lines as they kept sending bursts—including tracers—at me, and I had to keep sliding to the left and what I knew was enemy territory.

"I looked back once and Ward's guns were going full blast. The third Hun was right on our tail and all I can remember is swearing like the devil—ducking my head and putting the ship in a *very steep dive*. I tried to work to the right but those tracers kept passing through the right wing and as we had bombed from 15,000 feet we still had plenty of altitude.

"I surely thought my time had come. Finally the two on my right left us after we had gone through some clouds (I heard later that some French or American planes came to the rescue) but the plane on our tail stuck and Ward was still giving him plenty. He finally turned off, apparently out of control as he headed for our lines. We were now flying unpursued and Ward cried, 'For God's sake—boy go south.'

"My flying coat covered the compass which is not on the instrument board on Breguets as it is on the D. H. 4s. I yelled, 'Where's South?' and he pointed to a road and I made a right turn and levelled off for a long glide. I went over the edge of a forest and made a complete half turn to get into the wind and shot for what looked like a possible landing field.

"I was obliged to glide over a road to reach this field and the far side of the road had a camouflage curtain (evidently put there to hide troops marching up to the front). This looked fairly solid. I had never before seen one and I attempted to zoom up over it and succeeded—but crashed plenty on the other side and found we had landed in shell holes and barbed wire entanglements and what not.

"Those three Boche must have been pretty poor pilots, or we would never have got out of that hole. The one on our tail fell 'dead as a door nail' in a forest about a mile from where we landed. Having seen him go out of control, we put in a claim for him but were too late as a French flyer, I hear, beat us to it.

"Had we been in a Liberty D. H. 4, I doubt if we would be here today as it would never have stood that perpendicular dive. I'd almost swear I could see the wings bending and the whistling of the wires was terrible, but the old steel fuselage of the Breguet made the grade.

"I had promised Slauson my own leather flying coat in the event I got bumped off and Gus had the coat on his side of our room when I got back, which shows what he thought of my chances. Gus almost had a coat—he'll never forget that."

AN UNUSUAL and picturesque raid was carried out October 23 on the Bois de Lafolie.

The four Squadrons of the group flew in an immense square; on one side the 96th and 20th Squadrons behind each other; on the other the 11th Squadron leading, with the 166th flying immediately behind and at a slightly lower altitude. When the big swarm of bombers reached their objective, they whirled about in a wide circle, swept over the woods and dropped their bombs—a beautiful, effective and satisfactory maneuver.

(*Continued on page 60*)

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Clifford Allsopp's Diary

(*Continued from page* 58)

Falling into a square again, they headed for home. Just then a small Hun patrol bobbed up, decided that the 11th Squadron formation was too tight and formidable to be broken up and swooped down on the poor old 166th Squadron, the newcomer to the group.

To the amazement of everybody the Germans broke up the formation of the 166th Squadron and shot it up rather badly before the 11th Squadron men could whirl about and come to the rescue. But as the 11th Squadron fliers crossed above the Huns and turned a withering stream of lead into them the enemy fled for home.

The army learned later that this particular raid was highly effective and caused a number of casualties among the German troops concentrated in the woods. It was thought that the Germans raided Ligny and Bar-le-Duc that night in retaliation for the losses suffered from the American raids.

The next raid, that of October 27, led by Donald Malcolm of New York City with Lew Springer of Cimarron, New Mexico, as observer, proved to be tremendously exciting. The formation had barely dropped its bombs and turned for home when a hostile patrol caught them and attacked at once.

Three of the Germans came in from the rear, the main body hung off to the left and one daring pilot came in from the front and underneath to attack the leading American plane. His clever manoeuvre was a complete surprise and brought him into a position in the midst of the American formation, thus enabling him to riddle Malcolm's plane and wound Springer.

Then he got entirely away without being shot at, mainly because the observers would not fire for fear of hitting some of their comrades.

Allsopp's diary—October 27.

"Formation of six planes (not ten as reported) bombed Briquenay from 11,00 feet. Leader was Don Malcolm. His observer, Springer, was wounded in shoulder and deputy leader forced to land at Verdun with overheated motor —radiator pierced by bullets. Were attacked by at least twelve Huns. I flew top and closed in the V. Had three Boche on my tail but Perry, my observer, gave them plenty.

"I zoomed and zigzaged over every plane in our formation and had her wide open as we were covering more ground than the other planes and were making a right turn back toward our lines. Enemy planes that hit Springer and Deputy Leader Brewster, attacked from front and below—where it was impossible to dive for them without breaking up our formation.

"Other enemy planes stayed on our left—about two to four hundred yards —with the exception of three on our tail. All observers were taking chance shots at those on the left, and Perry was kept busy with those in the rear.

"All planes had very bright blue wings and red noses and pilots were beautiful fliers and were continuously stunting or going into spins, etc. Saw at least one shot down out of control.

"Those who attacked us from front (Note: a bombing machine's blind spot) did not come from the group on our left but must have climbed from below. Can't understand why planes on our left didn't close in on us. We were flying a very tight formation but were outnumbered at least two to one and their planes were faster.

"Perhaps they wanted to keep our attention to the left and rear while others gave us the surprise attack from front. Malcolm wanted to know who was flying in the rear and upper center position and told me it was great work and that I had kept Boche from diving in center or from rear and above and breaking up our formation, etc.

"Couldn't pay much attention to fighting as was kept busy flying over own formation and trying to avoid crashing into or down onto one of our planes."

Several days later after Beaumont was bombed, Heater and Norris whose plane was equipped with a camera, dropped behind the formation to take pictures of their objective. They wanted pictorial evidence of the damage their bombs had caused. They were flying at 15,000 feet and Norris was surprised to find that the intense cold of that high altitude had frozen the moisture on some part of the camera so that the mechanism would not operate the camera.

Norris noticed that a thin coating of ice or frost was forming on his goggles. Luckily he was able to see well enough to spot two Hun machines that crawled up under the tail of their plane and opened fire.

However, when he started shooting at the enemy, he found his vision so seriously impeded by the frost that he could not fire his guns accurately. Hoping to improve matters he jerked his goggles off, with the result that the fierce rush of air and intense cold almost blinded him.

Heater had been flying toward home, but upon seeing how wide of the mark Norris' tracers were going, and how closely pursued they were by the two Huns, he determined to try a desperate measure to shake the enemy off their tail.

Already traveling at a high rate of speed, he pulled his plane about in a swift climbing turn and sped head-on toward the two Fokkers, both his guns blazing like fury. His unexpected ruse so disconcerted the Germans that they hurried off towards home, and Heater fled in the opposite direction.

Going out, the flight was attacked by eight Germans in Fokkers who got the worst of the mix-up; every time they attempted to close in, the Americans threw such a hot screen of bullets about them that they stayed at a respectful distance. The Germans hung on doggedly until the Americans shot two of them down out of control.

Round Robin Club

(*Continued from page* 34)

tario, Canada, and Joe Ciezadlo, Roselawn, Ind.

Club No. 5 includes Howard Dempsey, Jasonville, Ind.; Joe O'Donnell, Huntington, W. Va.; Ellen Henne, Pittsburgh, Pa.; Geo. W. Westphal, Reading, Pa.; D. Norton, Bronx, New York City; Melville O'Keefe, Southington, Conn.; Harry Edwards, Brighton, Mass.; Mr. C. A. Arms, North Canton, Ohio; Gottfried E. Hempel, Dimock, S. D., and Woodrow Phillips, Milton, Iowa.

Judging from the letters that these members wrote us, there will be no scarcity of material for the Round Robin letters. We predict it will not be long before there will be 100 clubs in operation.

In case you did not see the announcement of the formation of the Round Robin, we will just repeat briefly that it is a simple and convenient correspondence club in which each member can get acquainted with nine other aviation enthusiasts of his own age and experience, and by writing just one letter every few weeks he can keep in correspondence with nine different people.

If you want to join this interesting club, just drop us a postcard, but be sure to tell us your age. We will see that you're included in the next group that is formed.

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An Airy Chat

(*Continued from page 6*)

SPEAKING of the Model Department, you will notice that we are again giving full sized plans for this month's model. In spite of the fact that we have given out a good many thousand free plans, we did not realize just how popular they were until we began receiving letters by the hundreds begging us for more.

There are just one or two things we would like to point out to you model builders, however. In writing for these plans, do not include in your letter any requests for information or any subscription orders or in fact anything that would require a letter in reply.

You see, the necessary amount of red tape that it takes to send out these plans often means that other parts of the letter would be overlooked, and it will greatly simplify our work if you ask only for the plans in one letter and then write another letter about anything else that you have on your mind. All inquiries for plans should be addressed to the Model Plan Department of Popular Aviation.

* * *

THE fall books are now beginning to come off the press and among the first that we notice are two by two of Popular Aviation's favorite writers.

Lieutenant James M. Richardson, whose War stories have become such a popular feature of P. A., has just published a book entitled, "Man's Wings—How to Fly in Word and Picture." Joe Ott, whose scale models are creating such a sensation in model circles, has blossomed out with a book called "Model Airplanes—Building and Flying." It's packed full of a lot of new designs and looks to us to be a winner.

So there's two books that really belong in any fellow's library. We think you will find them very valuable.

* * *

WE have two letters here that we are anxious to answer, but, unfortunately the writers forgot to give us their addresses, so we are paging Mr. Dow L. Case and Mr. Sam Yarvitz. If anyone knows where we can reach these gentlemen, please let us know.

* * *

WE received a long letter the other day from Arlie Baker, Route No. 4, Greenwood, Wisconsin. He would like to "exchange opinions, etc., with someone that is a pilot or mechanic."

We would suggest to Mr. Baker that he join one of our Round Robin Clubs. The Round Robins are coming along fine and you will find further news of them elsewhere in this issue. Just remember that it's never too late to join the Round Robin Club, as we are continually forming new groups and we are open for applicants at all times.

* * *

HERE'S a letter from Ambrose Askew, Jr., of Barrytown, N. Y., who is one of our regular correspondents (and a Round Robin member, by the way). He writes:

About a month ago I wrote asking if I could cover the Air Meet at Rhinebeck for your magazine. You answered that if anything unusual happened to let you know. Well—I went to the meet, and on the afternoon of July 5th "Johnny" Runger, standing on the upper center section of a "Fledgling" looped the loop standing up without any support but centrifugal force.

That's sumpin', aint it?

We'll say that's something, and although the stunt itself is not new, it's always a good one and gives the crowds a peach of a thrill. Thanks for the news, A. A., you're a good reporter.

* * *

HARRY EDWARDS of Brighton, Mass., wrote and thanked us for taking a rap at some of these so-called "aviation" movies, but the part of his letter that we want you to read is this:

In case any of your readers would like to have a pen pal in Australia, I'll give you his name: A. Nicholls, 27 Gamon St., Fortscray W. 11, Melbourne, Australia. Now don't ask me where I got it, 'cause I won't tell.

Now there's an opportunity for any of you fellows who want to know what's going on down in Australia and, believe me, there is plenty of activity down there. On account of the great distances in Australia that country has taken to aviation like a duck to water.

* * *

BUT in Sacramento, California, there is a young chap by the name of William Ishii. He sent us a photograph of himself and his home built glider, and his letter is so interesting that we are going to let you read it:

At last! POPULAR AVIATION *helped me to build this glider of my own design and this is one of the three I have built which has made successful flights. On our try-out it was towed by motorcycle while I was at the control. When it rose off of the ground the rope did not release so I landed swiftly into the motorcycle. Just a slight damage to my glider's tail group, but I was all bruised up. As the old saying, "try, try again until you succeed," consequently I have kept this in my mind and have done so. After repairing it flew a little better.*

I was not a trained glider pilot, but I was self taught through your book of POPULAR AVIATION, *which I think will be very useful for our future. Of course, I have been taking few hours of flying lesson, but I do not think that has any connection with the gliders. I also quit taking this course, because it is unconvenience for me to be there to put my time.*

I am hoping in near future that I'll be able to complete my course. During that time I'll be reading and studying your interesting book.

My age is 15 years old and I am native son of California and proud of it. My parent is from country of "Cherry Blossom," Japan. My family is interested in reading POPULAR AVIATION *and we continually taking this book and we always will, for I think as well as the family that is the best magazine on the news stand.*

Thanks for your appreciation of our magazine, William. We are glad to think that we are able to help anyone who shows such a progressive spirit as you do.

* * *

A BASHFUL young fellow from Mantua, Ohio, who calls himself "Rollie," sent us the following letter:

As I do not like to write or talk about myself, I am sending the thrilling experience of a young friend. Edward L. Parker is a young chap about fifteen or sixteen, and is constantly hanging around the field to pick up rides. Cross country or stunt flights please him to the utmost.

Well, one morning one of the pilots at the field invited Eddie to go up with him for a stunt flight right there at the field, and of course Eddie accepted, as he always does.

The flight had progressed to about 2,500 ft. when Al, the pilot, nosed the ship down for the dive previous to the loop. Just as the nose began to rise into the loop Eddie noticed that the safety belt was unbuckled and hanging loose across his lap.

Well, as Eddie put it, "I scrambled down into the cockpit and grasped the rudder bar in the bottom of the cockpit. In an instant the earth was above me, and I heard the OX motor pull down to a stall. We hung there bottom side up in the sky for what seemed to me fully ten minutes. Still clinging to the disconnected rudder bar in the forward cockpit, I watched the sky replace the earth again. Then I slid into the seat and buckled the safety belt, just as Al pulled the ship into a power stall and later a spin."

I would say that this is quite an experience for a chap as young as Eddie. What do you think?

Since you have asked us, we would say that that is quite an experience for *anyone*, regardless of age. Don't you think so, gang?

* * *

HERBERT L. RICKENBACKER, Jr., of Kinston, N. C., got a big thrill out of the following experience, which he tells about in this letter:

One Sunday morning, a friend and I went out to the airport. I get most of my rides for helping pilots around the hangars. This day a fence had been taken down in the runway and the poles had not been removed and the pilot asked us to move them to one side. We did so and asked him if it was done all right. He said, "sure, climb in."

Boy, I was the first one to reach the 'pit. We took off and climbed to about 2,000 ft. and, bless my landing gear, he cut the switch! I was getting a big thrill all the time. We glided around the field and came in with some sharp fish tailing and set her down three point as he always does, just as good as if the motor was turning over.

We'll bet it was some surprise when that engine quit barking, particularly if you didn't know it was coming.

(*Continued on page 64*)

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An Airy Chat

(*Continued from page 62*)

IT seems that the Airy Chat is a pretty swell clearing house for those readers who want to buy or sell anything in connection with aviation.

We got the following letter from Norvell Clarkson dated August 10th, the very day that the September P. A. was scheduled to appear on the newsstands:

I wish to thank you very much for running my notice in the "Airy Chat" column in your September issue. It sure did get results. To date I have had eight letters from North Dakota, Nebraska, Illinois, Iowa, Pennsylvania and Arkansas. Thanks a lot. I shall some day return the favor.

If Mr. Clarkson got all those replies even before the magazine was on the newsstands, we hate to guess how many inquiries he has had since then.

* * *

FRED QUICK of 305 N. Clayton St., Bloomington, Ill., sent us several photographs of an attractive lightplane that he is building. He would like to hear from someone who has a 25 h.p. motor that he is willing to sell for $30.

Herbert E. Brenner, 721 Grove Ave., Grantwood, N. J., has a new LeRhone 80 with a prop and spares for sale for $10.00 down and $5.00 weekly for four weeks.

Louis Komaromy, Box 272, Franklin, N. J., wants to buy a good second-hand plane. He would prefer a Great Lakes without the motor. The main requirement, however, is that it must be low in price.

Jas. Bianco is only 16, but he is already making plans to enter aviation as a life work. He wishes employment in an airplane factory or airport and will go anywhere in N. Y. Anyone who knows of a job for Jas. can write him at 549 E. 53rd St., Brooklyn, N. Y.

* * *

AT the rate things are going now, we will soon have to change the name of this column and instead of calling it the Airy Chat, we'd have to call it the Art Department.

We receive many excellent drawings every month and we would like to be able to let you see them, because some are really knockouts, but as we haven't got room to show you all of the pictures it doesn't hardly seem fair to discriminate against any particular drawings, so we will have to just content ourselves with telling you about them.

Bill Metzger of Lakewood, Ohio, sends a nice letter and two more of his carefully worked out drawings of racing planes in flight. This makes six drawings we have had altogether from Bill, who now heads the list of artists in the number of contributions to our gallery.

D. Norton of Bronx, N. Y. City, sends a dramatic pen and ink sketch of a Fokker D-VII going down out of control and about to crash in no-mans land.

Louis P. Jenkins of Chester, Pa., offers two attractive pencil sketches, one of a Bristol fighter in a scrap with two Fokker D-VII, and the other a Navy Hawk coming out of a loop.

Lawrence F. Henstock of Ashbourne, Derbyshire, England, sends us a neat sketch of a Sopwith Salamander. In writing about War plane photographs Mr. Henstock says, "The issue of 'Flight' for June 26th contains well over 40 photographs of British aircraft used during the late War. Some of your readers might like to get a copy—price 1 s. (25c), editorial address, 36 Great Queen St., Kingsway, London, W. C. 2, England.

* * *

GEORGE C. JORDAN of Waynesboro, Virginia, sent us in three drawings that are probably the most attractive and most accurate sketches we have ever had submitted by any reader. Two of the drawings were in full color, one showing a Fokker D-8 monoplane and a Sopwith Dolphin and the other one an action view of Richtofen's Fokker Triplane attacking a Nieuport 27-C1. The third drawing was a pen and ink sketch of a Spad bringing down a Fokker D-VII with the German pilot just about to jump from the burning plane.

David Noguchi proves that he can draw planes by sending a full color pastel drawing of Jimmy Doolittle's racer, and a pencil sketch of a Camel in combat with a Roland pursuit. Then to show us his further artistic ability he also sent three excellent portraits that would do credit to a professional artist. Baron Von Richtofen, Wiley Post and Harold Gatty are the subjects for these sketches which are truly remarkable in their likenesses.

Bob Blum of Rochester, New York, sends an interesting sketch of the autogiro dropping food and equipment to a submarine, and also an action sketch of the Sopwith Dolphin in a scrap with a Fokker D-VII.

Bob Smith of Oakland, California, sends a couple of knockout sketches of a Fokker D-VII. You could almost build a plane from the detail he shows.

Incidentally Bob had the following comments to make in regard to the Junker's plane which was illustrated on page 27 of September P. A.:

In your September issue on page 27, the caption under the picture of the Junkers claimed that it did not fly, but the data found in a 1919 issue of "Aviation," seems to prove that it was a successful plane. Here is some of its specifications, etc.:

Top wing, 50 ft.

Lower wing, 36 ft. 2 in.

Motor, 230 h.p. Benz.

Remarks—It was built by the Fokker-Junkers works at Dessau. The aerofoil of the top wing was 16½ in. which tapered down to 6 in. at the tip and the foil of the lower wing diminished from 12 to 4 in. at the tip.

C. V. Lightheart of Vancouver, B. C., also writes about the same plane in this letter:

I was looking over the Famous War Planes with a German war aviator, Mr. W. A. Joress. He got all excited when he saw the picture of the all-metal Junkers. He said he flew one during the war. It was pretty fast, climbing at 120 m.p.h. and was covered with bullet-proof armor from the prop to just back of the cockpit. It can be seen in the picture, if you look closely. It was also heavily armed with machine guns along the fuselage. Mr. Joress said it took about 1,200 yds. to get it off the ground and that it was made of sheet iron in parts (the wings), as they were short of aluminum.

We are glad to have these details of this plane. Our caption under the picture seems to lead some to believe that the plane had never flown. What we meant was that none of the American flyers who found it after the war would take a chance with it for fear it had been tampered with.

* * *

CARLOS VINCENT and Bob Butler of Grass Valley, California, sent us the following letter which should be of considerable interest in view of Herdon and Pangborn's recent experiences:

A friend of mine and I had what we think the most thrilling flying experience of our lives, that of working for the Herndon-Pangborn Barnstorming Circus, the Flying Fleet. In return for odd jobs we did for them we were given several rides apiece. We became intimately acquainted with the pilots, especially Hugh Herndon (we called him Hughie then).

They used three planes, the New Standards, four place open cockpit ships. Our most thrilling flight was on the daily parachute jump made by Jerry, chief mechanic. Hughie piloted the plane. We took off about dusk, climbed to an altitude of about eight hundred or one thousand feet from the ground. At a signal from Hughie, Jerry climbed out on the wing close to the cockpit and jumped, the bag being tied to the plane by rope. The parachute pulled from the bag by the weight of the jumper. Our job was to pull the bag back into the plane after the drop.

The jump was followed by a series of steep banks and spirals and a dive on the field after which we landed. No mention at this time was made of their round the world flight.

* * *

SPEAKING of Herndon and Pangborn, Harold G. Martin of Bronx, New York City, sent us several snapshots of their plane which he took at Floyd Bennett Airport. He also sent a couple of pictures of the plane in which Boardman and Polando flew from New York to Istanboul.

Thanks for the pictures, Harold. We are sorry that we couldn't get them into this issue, but we appreciate your interest just the same.

* * *

THAT seems to be the highlights of what happened around here this past month. With the coming of Fall, there are a lot of activities scheduled, so we will be looking forward to being able to tell you all about it next month. In the meantime, happy landings.

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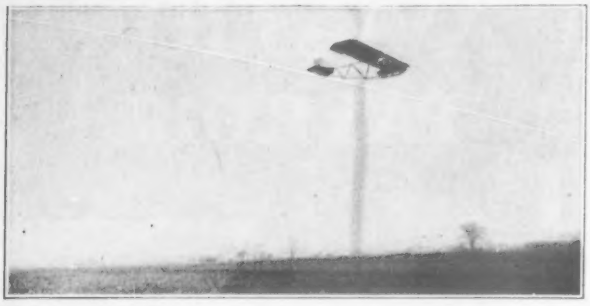

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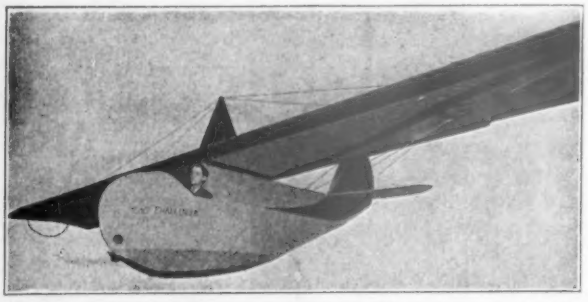

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